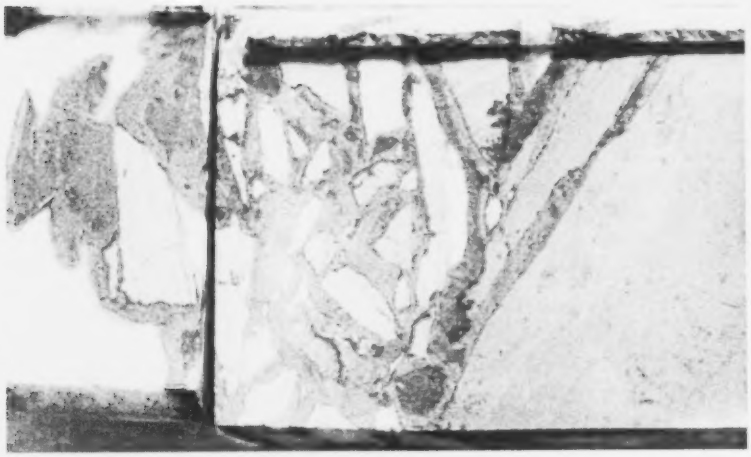
EUB/AGS Geo-Note 2003-02

Carbonate-Hosted Pb-Zn (MVT) in Northeastern Alberta - 2002 Core Program: A Contribution to the Carbonate-Hosted Pb-Zn (MVT) Targeted Geoscience Initiative



Alberta Energy and Utilities Board
Alberta Geological Survey

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EUB/AGS Geo-Note 2003-02

Carbonate-Hosted Pb-Zn (MVT) in Northeastern Alberta - 2002 Core Program: A Contribution to the Carbonate-Hosted Pb-Zn (MVT) Targeted Geoscience Initiative

R.J. Rice and [1]T.A. Zerbe

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December 2003

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Cover photo: Fault brecciated dolostone with sulphides (Py) and contemporaneous coarse calcite; Upper Devonian Jean Marie Member, Redknife Formation; Calstan Senex 04-03-100-07W5 at 257.8 m TVD. Core length 18 cm, top to left

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Abstract

For the 2002 MVT core program, 113 core from Middle and Upper Devonian carbonates in the subsurface of northern Alberta were examined. Core was selected from a large area incorporating the Fort McMurray and Fort Vermilion-Harper Creek study areas. A short, faulted and brecciated, intersection was encountered in one well, but no thicker intervals displaying classic MVT features, such as collapse breccia with hydrothermal dolomite, were found. Small amounts of pyrite were common, almost entirely as small fracture fills, nodules and stratification parallel accumulations that often are associated with fossil detritus. No visible galena or sphalerite were encountered. Trace element analyses returned a maximum lead (Pb) concentration of 246 parts per million (ppm) from pyrite-bearing Keg River Formation dolostone at 780 m in well GPD Noel et al Jean D'Or (15-27-109-07W5). The best zinc (Zn) concentration of 75 ppm came from pyrite-bearing Waterways Formation limestone at 110 m in well Esso 90-12 Oslo OV (07-10-095-09W4). The only sulphide mineral associated with fault-controlled breccia is pyrite with contemporaneous coarse calcite occurring at 257 m in Jean Marie Member, Redknife Formation dolostone in well Calstan Senex 4-3-100-7 (04-03-100-07W5). This pyritiferous zone is not associated with anomalous Pb or Zn values, but is associated with concentrations of arsenic (As) up to 383.4 ppm, tellurium (Tl) up to 3.4 ppm and molybdenum (Mo) up to 56.8 ppm; the concentration of these elements is an order of magnitude greater than those in most surrounding tabulated data for other core samples.

1 Introduction

The 2002 core program was conducted by the Alberta Geological Survey (AGS) during the months of June, July and August 2002 at the Alberta Energy and Utilities Board Core Research Centre (CRC), Calgary and in the months of September and October 2002 at the AGS Mineral Core Research Facility (MCRF), Edmonton. The 2002 core program was designed to complement a 2001 field program conducted in northern Alberta by the AGS (*see* Waters and Rice, 2003, for a GIS summary of the 2001 field data). The 2001 and 2002 work programs represent the AGS contribution to the federally sponsored Mississippi Valley-Type (MVT) Targeted Geoscience Initiative (TGI) project 232-110-010009. This was a co-operative project with the Geological Survey of Canada, Calgary, and the C.S. Lord Northern Geoscience Centre, Yellowknife, Northwest Territories, designed to acquire new data in northern Alberta and the southern Northwest Territories relevant to Mississippi Valley-type (MVT) Pb-Zn deposits and occurrences, and to thereby promote mineral industry exploration programs in this region.

The stratigraphic target for the 2002 core-logging program was Middle and Upper Devonian carbonates in northern Alberta. For this purpose, two study areas were defined: the Fort Vermilion-Harper Creek study area and the Fort McMurray study area (Figure 1). The reason for the delineation of these two areas in northern Alberta is given in Rice (2003). Both conventional hydrocarbon exploration wells and a smaller number of oil sand exploration wells (Fort McMurray study area) that bottom in underlying Middle Devonian carbonates were examined. Figure 1 shows the distribution of the selected wells within the two study areas and Table 1 provides a list of the wells examined during the 2002 core-logging program.

2 Methodology

Cores were examined and sampled during the 2002 core program at the CRC and the MCRF. Core logging was done using an application developed by Z. Amer, T.A. Zerbe and B.E. Buschkuehle at the Alberta Geological Survey that integrated a Microsoft Access® database (MVT Core) with RockWare® Logplot™ to produce the core logs presented in Appendix A, with Figure 2 providing an explanatory legend for the geological features identified. Although carbonate lithofacies and depositional setting were recorded during core logging using Machel and Hunters' (1994) reefal facies scheme for Middle to Late Devonian shallow marine carbonates (Figure 3), this was not the primary focus of the core program. Rather, the program's main purpose was to identify if any MVT-like features are present in the core and the sampling of sulphide minerals. All downhole locations given in this report are true vertical depths.

All sulphide samples were sent to Acme Analytical Laboratories, Vancouver, for Inductively Coupled Plasma (ICP-ES Aqua Regia) trace element analyses. The trace element data are presented in Table B2, Appendix B and discussed in Section 3. Selected samples of diagenetic products were submitted for stable (C, O) and radiogenic (Sr) isotope analysis to the Isotope Science Laboratory, Department of Physics and Astronomy, University of Calgary, and to the isotope laboratory under the direction of Dr. R. Creaser, University of Alberta, respectively. N. Wilson of the Geological Survey of Canada did fluid inclusion work on these samples. The isotope and fluid inclusion work was done to permit a comparison with the MVT Pb-Zn deposits at Pine Point, N.W.T. and Robb Lake, B.C. These data and associated interpretations are presented elsewhere as separate publications.

3 Geochemical Analyses of Core Samples

Only core samples containing sulphides were analyzed for their trace element content. In all cases, visual inspection suggested the sulphides were pyrite. No galena or sphalerite were visually identified in core, and this was confirmed with ICP analyses. A total of 26 core samples (Table B1) from four formations (Keg River, Slave Point, Waterways and Redknife), and a depth range between 99 to 847 m, were submitted for trace element analysis.

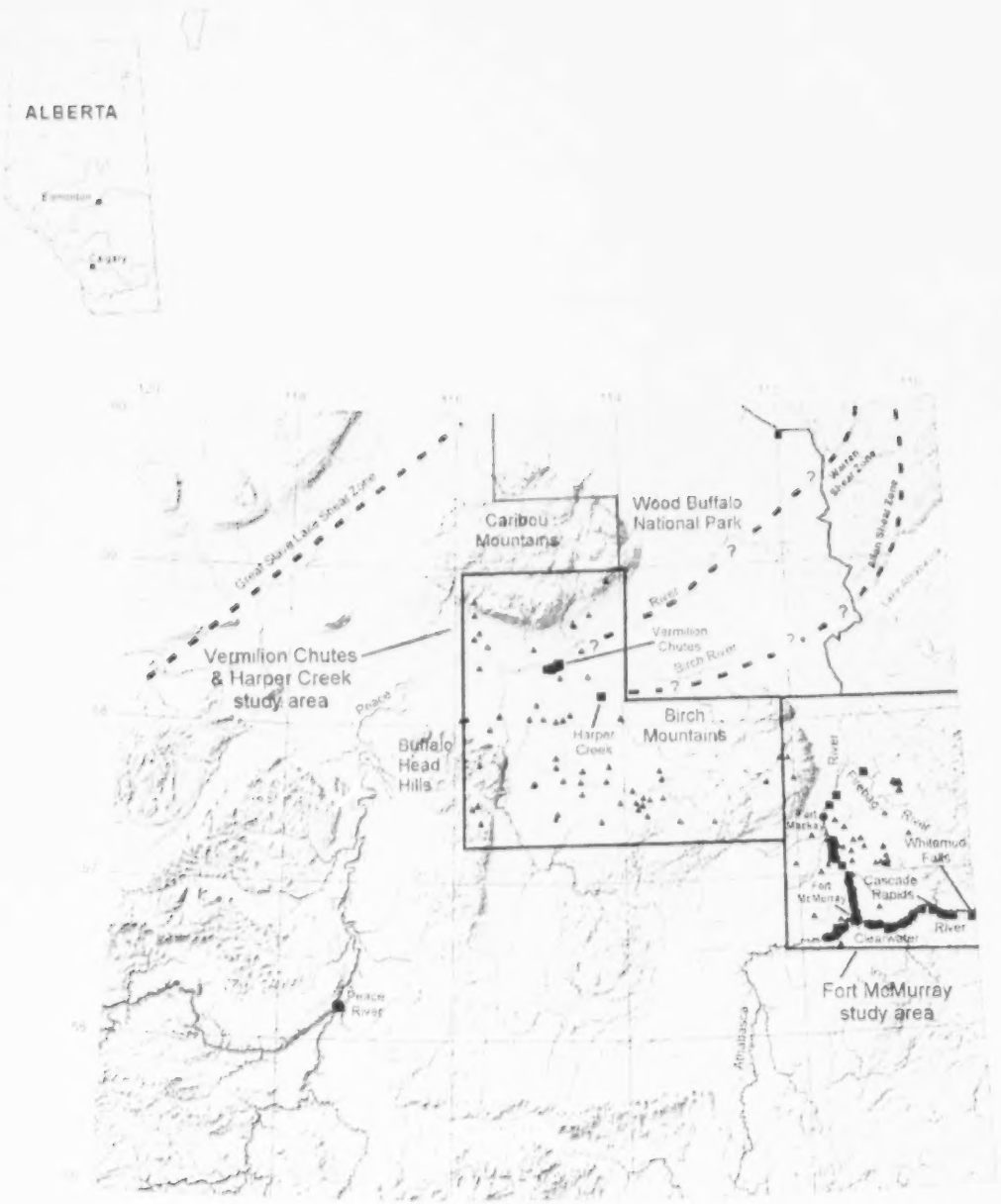


Figure 1. Location of cored wells examined (triangle) in the Fort Vermilion-Harper Creek and Fort McMurray study areas in northern Alberta. Field stations from the 2001 field program are indicated by squares.

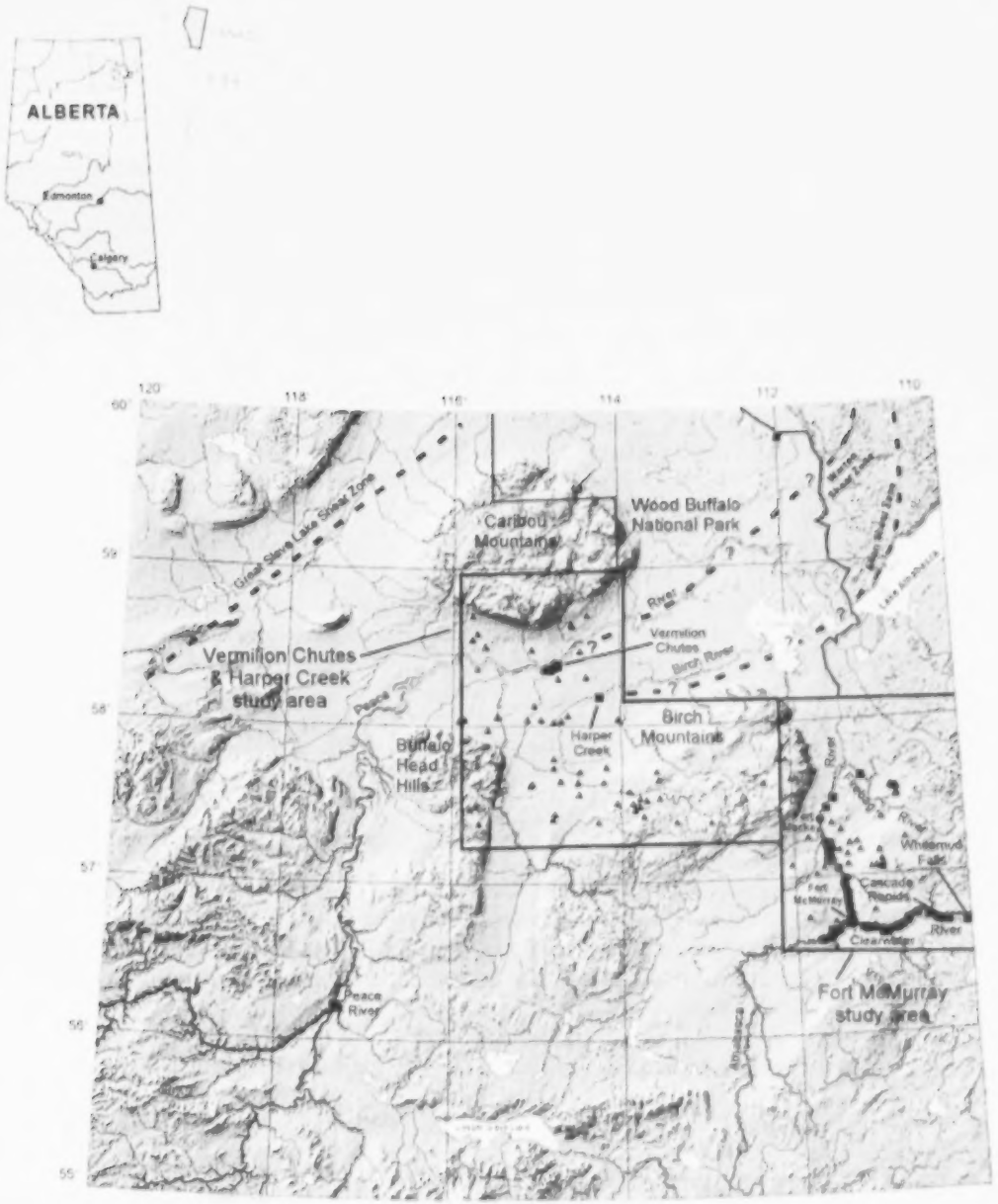


Figure 1. Location of cored wells examined (triangle) in the Fort Vermilion-Harper Creek and Fort McMurray study areas in northern Alberta. Field stations from the 2001 field program are indicated by squares.

Table 1. Conventional hydrocarbon and oil sand wells examined for the 2002 core program.

UWI	WellName	Total Depth	Formation/Gp	UTM (NAD27)		Zone	NAD83		Analysis
		(m)		Easting	Northing		Latitude	Longitude	Performed
00/01-11-101-02W5/0	Pan Am Sun B-1 Mikkwa	1084	Keg River	666753.75	6403749.78	11	57.748716	-114.198265	
00/01-28-107-05W5/0	Mutex IOE Mikkwa	927	Keg River	631451.30	6465697.30	11	58.314423	-114.756256	
00/02-05-110-10W5/0	Placid et al Beaver 2-5-110-10	1128	Wabamun	580063.91	6486926.23	11	58.517406	-115.625603	
00/02-32-089-12W4/2	Suncore Clarke	717	Keg River	448653.86	6290612.90	12	56.758340	-111.872490	
00/03-07-101-05W5/0	FPC Noel et al Harper	1147	Muskeg	630294.37	6402360.69	11	57.746309	-114.811013	
00/03-22-111-04W5/0	IOD IOE CEGO Rennie	904	Keg River	640360.56	6503128.16	11	58.647545	-114.581352	
00/03-26-104-12W5/0	Amoco ICG Tall Creek	1225	Keg River	566663.02	6434982.34	11	58.053220	-115.870540	
00/04-03-100-07W5/0	Calstan Senex Creek 4-3-100-7	1223	Keg River	615595.28	6390605.17	11	57.644802	-115.063431	ICP-ES
00/04-07-096-09W4/0	Alsands 18 Hangst OV	119.8	Waterways	471910.42	6351913.55	12	57.311210	-111.466280	ICP-ES
00/04-08-097-02W5/0	Shell et al Senex	1273	Keg River	662649.57	6364731.76	11	57.398136	-114.293259	
00/04-14-093-07W4/0	Steepbank 1-75 OV 4-14	235	Waterways	498734.88	6324143.30	12	57.062610	-111.020860	ICP-ES
00/04-15-101-11W5/0	Amoco Wadlin Lake	1430	Slave Point	576331.31	6402668.34	11	57.761490	-115.717160	
00/04-26-104-01W5/0	Mutex IOE Edra	856	Keg River	673880.20	6438046.23	11	58.051662	-114.053619	ICP-ES
00/04-28-093-09W4/0	Esso 82 Oslo OV BSL-29	138.1	Waterways	475983.44	6327451.09	12	57.091700	-111.396310	
00/04-30-109-03W5/0	IOD IOE T2 Fox Lake	669	Keg River	645978.63	6485664.49	11	58.488998	-114.495865	
00/04-32-093-10W4/0	Bear Vampire #2	269	Slave Point	464609.43	6329226.03	12	57.106910	-111.584240	
00/05-08-100-22W4/0	Norcen POR Birch	1285	Winnipegosis	345684.86	6393705.51	12	57.661034	-113.586563	
00/05-12-099-04W5/0	Amoco Owl Creek	1236	Keg River	648662.39	6383815.40	11	57.574181	-114.514153	
00/06-02-097-19W4/0	Dome Home Liege	1232	Slave Point	381127.39	6361774.43	12	57.385130	-112.977380	ICP-ES
00/06-05-098-24W4/0	Canterra Jean	565	Grosmont	328016.54	6373417.61	12	57.472630	-113.867950	
00/06-10-100-05W5/0	Shell Swamp	1145.4	Wabamun	635340.72	6393179.31	11	57.662411	-114.731468	
00/06-15-098-24W4/0	Esso Jean River	573	Grosmont	331305.72	6376477.60	12	57.501320	-113.815290	
00/06-22-098-01W5/0	Pan Am A-1Mikkwa River	1195	Keg River	675382.26	6378496.43	11	57.516891	-114.071808	
00/06-23-094-07W4/0	Chevron Steepbank	438	Keg River	499071.66	6335720.39	12	57.166610	-111.015350	
00/06-24-097-24W4/0	Pan Am A-1 Sputnik	1344	Keg River	334312.06	6368386.54	12	57.429832	-113.759705	
00/06-26-105-07W5/0	PEX Mikkwa EV	170	Grosmont	615381.42	6445897.59	11	58.141210	-115.040180	
00/06-29-104-06W5/0	PEX Mikkwa EV	318	Grosmont	620444.42	6436342.15	11	58.054090	-114.959150	
00/06-29-104-07W5/0	PEX Mikkwa EV	290	Grosmont	610657.52	6436057.13	11	58.054080	-115.125010	
00/06-31-098-22W4/0	Pan Am B-1 Jean	1213	Keg River	346001.04	6380721.10	12	57.544628	-113.573021	
00/06-31-101-05W5/0	Signal 72 Mikkwa	1119	Keg River	629977.22	6409124.87	11	57.807114	-114.812668	
00/06-31-104-09W5/0	Shell et al Tall Cree	1090	Keg River	589654.35	6437460.25	11	58.071419	-115.480194	
00/06-33-099-07W5/2	Calstan Senex Creek 6-33-99-7	1224	Wabamun	614400.12	6389359.39	11	57.633923	-115.084030	
00/07-02-100-04W5/0	Shell Owl River Strat Test 1	1148	Wabamun	647384.73	6392025.73	11	57.648280	-114.530500	
00/07-10-095-09W4/0	Esso 90-12 Oslo OV	119.7	Waterways	477712.27	6342316.28	12	57.225320	-111.369110	ICP-ES
00/07-18-099-24W4/0	Canterra Jean	349	Grosmont	325040.81	6386588.80	12	57.589650	-113.926960	
00/07-19-098-24W4/0	CNRL et al Harper 7-19-98-24	475	Grd Rapids/Grosmont	327112.73	6378325.33	12	57.516420	-113.887586	
00/07-19-104-05W5/0	Chevron Pan Am Harper	1020	Keg River	629411.48	6435018.32	11	58.039684	-114.808060	
00/07-26-094-09W4/0	Gulf Hartley C.H. #9	69.2	Waterways	470354.34	6337805.81	12	57.182590	-111.490400	
00/07-28-087-12W4/0	Bear Vampire #1	702	Slave Point	464336.63	6269626.61	12	56.571500	-111.580400	
00/07-30-098-23W4/0	CanOxy Jean Lake	451	Grosmont	336651.02	6379789.33	12	57.532990	-113.728420	
00/07-34-098-24W4/0	Texex Jean River	457	Grosmont	332092.62	6381331.65	12	57.545160	-113.805520	
00/07-36-100-04W5/0	FPC Noel et al Harper	1062	Keg River	648647.06	6400260.16	11	57.721760	-114.504295	
00/08-17-098-11W5/0	Dome Home Talbot Lake	1724	Keg River	575548.45	6373756.95	11	57.501991	-115.739342	
00/08-20-110-11W5/0	Gulf AEC-Beaver-Ranch	1190	Zama	570569.29	6491804.68	11	58.562851	-115.787033	
00/10-09-112-11W5/0	Arco CS Carl	1318	Keg River	570449.73	6508612.45	11	58.713787	-115.783852	
00/10-09-113-11W5/0	Pan Am A-1 Carl Creek	1184	Slave Point	570174.50	6518241.59	11	58.800290	-115.785590	
00/10-12-093-07W4/0	Steepbank 2-75 OV 10-12	267.3	Waterways	501165.28	6323313.95	12	57.055160	-110.980790	ICP-ES
00/10-13-097-06W5/0	Chevron CDN-SUP Circle	1279	Grosmont	630835.15	6366084.69	11	57.420540	-114.821490	

Table 1. Conventional hydrocarbon and oil sand wells examined for the 2002 core program, continued.

UWI	WellName	Total Depth	Formation/Gp	UTM (NAD27)		Zone	NAD83		Analysis
		(m)		Easting	Northing		Latitude	Longitude	Performed
00/10-20-104-12W5/0	Pan Am B-1 Cree	1215.8	Keg River	562342.83	6433931.38	11	58.044410	-115.944000	
00/10-24-093-07W4/0	Steepbank 2-75 OV 10-24	262.7	Waterways	501164.98	6326552.20	12	57.084250	-110.980780	ICP-ES
00/10-28-107-03W5/0	GPD Noel et al Jean D'Or	860	Keg River	650669.12	6467151.06	11	58.321297	-114.427635	
00/11-03-097-11W5/0	Placid Rossbear	1755	Muskeg	578169.62	6361504.18	11	57.391512	-115.699527	
00/11-07-090-07W4/0	Mobil 90 Clarke Creek OV	203.5	Waterways	493227.33	6294162.37	12	56.793230	-111.110870	
00/11-14-108-11W5/0	Arco et al. Beaver	1084	Keg River	574785.79	6471461.55	11	58.379486	-115.721230	
00/11-18-093-07W4/0	Texex Steepbank 2-75 OV	226.8	Waterways	492628.44	6324952.28	12	57.069820	-111.121570	
00/11-26-099-15W4/0	Texaco Namur 2-81 OV	487.5	Waterways	419436.53	6387191.45	12	57.621770	-112.348770	
00/11-30-097-05W5/0	SC ICGR PANNY 11-30-97-5	1303	Wabamun	631941.99	6369411.38	11	57.450081	-114.801285	
00/12-25-114-02W5/0	IOE Gardenr	1130	Slave Point	661682.66	6535572.59	11	58.931150	-114.190980	
00/12-33-103-10W5/0	Amoco Mikkwa	1159	Keg River	583061.00	6427926.61	11	57.987099	-115.595284	
00/12-36-093-07W4/0	Steepbank 2-75	256.3	Waterways	500417.73	6329786.19	12	57.113410	-110.994000	
00/13-23-094-07W4/0	Chevron WDW Steepbank	398	Keg River	498562.16	6336681.23	12	57.175240	-111.023780	
00/13-31-096-06W4/0	Shell Eatha EV	267	Beaverhill Lake	501282.59	6359380.85	12	57.379150	-110.978670	
00/14-05-097-21W4/0	Mutex IOE Seaforth	1274	Keg River	356810.98	6363442.58	12	57.393105	-113.382477	
00/14-19-109-03W5/0	IOD IOE T1 Fox Lake	716	Beaverhill Lake	646071.41	6485350.55	11	58.486150	-114.494476	
00/14-35-110-11W5/0	Shell Union FtVer	1187	Keg River	574228.01	6495971.45	11	58.599655	-115.722801	
00/15-01-098-12W5/0	CDN Roxy et al Talbot Lake	1707	Keg River	571943.63	6371175.01	11	57.479390	-115.800240	
00/15-10-112-03W5/0	Texaco IOE Wentzel	876	Keg River	650285.41	6511169.70	11	58.716366	-114.405167	
00/15-27-109-07W5/0	GPD Noel et al Jean D'Or	978	Keg River	612423.13	6485517.47	11	58.497616	-115.071121	ICP-ES
00/15-31-104-04W5/0	Chevron Amoco Harper	975	Keg River	638913.95	6439702.95	11	58.078854	-114.644493	ICP-ES
00/16-03-100-02W5/0	Champlin Mikkwa	1160	Keg River	665541.39	6393372.74	11	57.654064	-114.225739	
00/16-21-111-04W5/0	Husky IOE Rennie	925	Keg River	639373.79	6504208.59	11	58.657558	-114.597672	
00/16-22-104-05W5/0	Chevron Amoco Harper	1006	Keg River	634296.93	6436043.72	11	58.047436	-114.724800	
02/03-31-100-22W4/0	GPD et al. Bergerson A3-31-100-22	1267	Keg River	344722.04	6399914.29	12	57.716415	-113.606682	
1A/02-19-098-05W4/0	Synenco 01-02 FB 02-19-98-5*	111.3	collapse breccia	511782.80	6374580.78	12	57.515535	-110.803317	
1A/05-20-098-05W4/0	Synenco 01-01 FB 05-20-98-5*	86.92	Waterways	512584.66	6374991.30	12	57.519201	-110.789911	
1A/11-20-098-05W4/0	Synenco 01-04 FB 11-20-98-5*	54.9	Waterways	512911.28	6375283.11	12	57.521813	-110.784443	
1A/16-19-098-05W4/0	Synenco 01-03 FB 16-19-98-5*	78.66	Waterways	512195.23	6375794.57	12	57.526427	-110.796372	
1AA/05-05-099-05W4/0	Synenco 01-80 NLP 05-05-99-5	74.87	Waterways	512395.30	6379737.49	12	57.561944	-110.793694	
1AB/13-06-099-05W4/0	Synenco 01-86 NLP 16-01-99-6	85.04	Waterways	510268.56	6380754.05	12	57.571128	-110.829197	
AA/01-12-099-06W4/0	Synenco 01-67 NLP 01-12-99-6*	102.78	Waterways	510197.15	6381242.33	12	57.575411	-110.829506	
AA/01-22-093-11W4/0	Syn Atha #27-42-0-0 OV 1-22	125.1	Beaverhill Lake	459125.78	6325980.25	12	57.077300	-111.674230	ICP-ES
AA/01-27-095-12W4/0	Suptst 2-73-3C Atha OV 1-27-95-12	102.1	Waterways	448702.32	6347141.15	12	57.266327	-111.850502	
AA/02-21-093-07W4/0	Steepbank 2-75 OV 2-21	253.6	Waterways	496324.41	6325663.04	12	57.076355	-111.061531	
AA/03-05-099-05W4/0	Synenco 01-16 NLP 03-05-99-5*	155.55	Methy	512691.77	6379516.43	12	57.559845	-110.787887	
AA/03-08-099-05W4/0	Synenco 01-93 NLP 03-08-99-5*	142.82	collapse breccia	512704.96	6380999.02	12	57.573162	-110.787589	
AA/03-12-099-06W4/0	Synenco 20-50 firebag 03-12-99-6*	92.96	collapse breccia	509266.42	6380968.79	12	57.572974	-110.845078	
AA/03-33-094-10W4/0	Syncrude 1 Hartley OV	35.7	Waterways	466690.23	6338757.96	12	57.192688	-111.551163	
AA/04-06-099-05W4/0	Synenco 20-67 firebag 04-06-99-5*	141	collapse breccia	510495.04	6379492.24	12	57.559684	-110.824601	
AA/04-14-095-11W4/0	Amoco Ings	68.9	Waterwars	458763.57	6343596.83	12	57.235620	-111.684050	
AA/05-28-096-10W4/0	Koch UTS Ft-Hills	0	Beaverhill Lake	465554.76	6357090.91	12	57.357280	-111.572500	
AA/06-06-093-11W4/0	Syn Atha 49-33-0-0 OV 6-6	89	Waterways	453521.70	6321489.87	12	57.036434	-111.765831	
AA/06-12-099-06W4/0	Synenco 01-69 NLP 06-12-99-6*	91.5	collapse breccia	509439.55	6381261.87	12	57.575603	-110.842172	
AA/06-20-089-10W4/0	Esso BSL 40-1 Oslo OV 6-20-89-10	166.1	Waterways	465526.34	6287458.12	12	56.731777	-111.563423	
AA/07-29-093-13W4/0	Aostra utf Dover A077 OV 6-29	108	Waterways	436110.67	6328197.86	12	57.094601	-112.054375	ICP-ES
AA/08-11-099-06W4/0	Synenco 20-34 firebag 08-11-99-6*	109.8	collapse breccia	508410.24	6381518.67	12	57.577930	-110.859373	
AA/08-29-094-08W4/0	Esso 1-86 Oslo BSL 31 OV 8-29	114	Waterways	485325.71	6337442.93	12	57.181850	-111.242737	ICP-ES

Table 1. Conventional hydrocarbon and oil sand wells examined for the 2002 core program, continued.

UWI	WellName	Total Depth	Formation/Gp	UTM (NAD27)		Zone	NAD83		Analysis
		(m)		Easting	Northing		Latitude	Longitude	Performed
AA/09-08-095-10W4/0	Shell 98-216 Muskeg OV	94.6	Waterways	465005.61	6342907.82	12	57.229839	-111.579620	
AA/09-11-099-06W4/0	Synenco 20-33 firebag 09-11-99-6*	100.65	collapse breccia	508447.22	6381999.12	12	57.582245	-110.858738	
AA/10-05-099-05W4/0	Synenco 01-107 NLP 10-05-99-5*	45.75	collapse breccia	512937.86	6380309.41	12	57.566961	-110.783732	
AA/10-15-095-05W4/0	Suncor Firebag 10-15-95-5	319	Waterways	516930.00	6344422.91	12	57.244473	-110.719475	
AA/12-14-089-10W4/0	Esso BSL 40-41 Oslo OV 12-14	189.8	Waterways	469995.81	6286216.97	12	56.720936	-111.490234	
AA/12-16-094-09W4/0	Home CH- 23 Atha OV	66.5	Waterways	475996.71	6334651.32	12	57.156380	-111.396782	
AA/12-26-095-11W4/0	Suptst 2-72-1C Atha OV	94.2	Waterways	458936.35	6347830.46	12	57.273552	-111.680954	
AA/13-05-099-05W4/0	Synenco 01-105 NLP 13-05-99-5*	73.81	collapse breccia	512361.62	6380629.13	12	57.569849	-110.793348	
AA/14-14-101-14W4/0	Texex Eaglenest 4-75OV	506.9	Beaverhill Lake	429708.41	6403777.14	12	57.772434	-112.181686	
AA/15-06-099-05W4/0	Synenco 20-79 firebag 15-06-99-5*	99.68	collapse breccia	511438.47	6380511.87	12	57.568820	-110.808786	
AA/16-07-095-09W4/0	Esso 4-86 Oslo Bsl 31 OV 16-7-95-8	128	Waterways	482997.21	6343196.32	12	57.233452	-111.281647	
AA/16-17-101-13W4/0	Texex Eaglenest 4-75OV 16-17-101-13	543.2	Waterways	435337.10	6403583.53	12	57.771542	-112.087029	
AA/16-34-099-13W4/0	Texex Eaglenest O.V.	561.4	Beaverhill Lake	438483.72	6388899.59	12	57.640110	-112.030390	ICP-ES
AB/01-07-099-05W4/0	Synenco 01-91 NLP 01-07-99-5*	112.85	collapse breccia	511946.98	6381005.07	12	57.573237	-110.800261	
AB/14-01-099-06W4/0	Synenco 20-51 firebag 14-01-99-6	109.19	Methy Formation	509460.08	6380614.44	12	57.569787	-110.841854	
AC/04-12-099-06W4/0	Synenco 01-74 NLP 04-12-99-6	70.15	Waterways	509031.79	6380849.70	12	57.571909	-110.849005	
AE/01-29-092-09W4/0	Test Hole #115	69.2	Waterways	475475.28	6317662.09	12	57.003738	-111.403740	
Note:									
oil sands wells									
* - oil sands wells examined for Pb/Zn mineralization; core not logged									

Trace element analyses returned a maximum Pb concentration of 246 ppm from pyrite-bearing Keg River Formation dolostone at 780 m in well GPD Noel et al Jean D'Or (15-27-109-07W5). The best Zn concentration is 75 ppm and came from pyrite-bearing Waterways Formation limestone at 110 m in well Esso 90-12 Oslo OV (07-10-095-09W4).

The only example of fault controlled breccia with subsequent infilling by sulphides (Py) and synchronous coarse calcite, is in well Calstan Senex 04-03-100-07W5 at approximately 257 m in dolostone of the Upper Devonian Jean Marie Member, Redknife Formation (Appendix D). Four samples were collected across approximately 1 m of brecciated and infilled dolostone; these four samples returned maximum Pb and Zn concentrations of only 3.6 and 58 ppm, respectively. However, the As (up to 383.4 ppm), Tl (up to 3.4 ppm) and Mo (up to 56.8 ppm) concentrations for these samples are an order of magnitude greater than most of the other sulphide core samples that were analyzed.

Tables B1 and B2, Appendix B, provide a list of core samples and their analytical data, respectively. However, Table B1 does not represent all core samples that were collected from the 2002 core program; other samples were submitted for isotopic analyses as mentioned above.

A comparison of trace element data for the core samples obtained during the 2002 core-logging program, with trace element data compiled from various sources for carbonates and associated non-clastic lithologies in northern Alberta, can be made by inspection of Table B2 in Appendix B, and Table C1 in Appendix C, respectively. A comparison of the Zn and Pb results in Tables B2 and C1 shows that, in the case of Zn, the core samples from the 2002 core program fall within the lower range of zinc concentrations reported for carbonates in northern Alberta. In contrast, the Pb results for the core samples reported on in this publication are more similar to the characteristic Pb concentrations reported for carbonates in northern Alberta.

4 Discussion

None of the wells examined during the 2002 core program contains classic MVT features, such as significant thicknesses of collapse breccia with hydrothermal dolomite, that characterize the deposits at the closed Pine Point mine on the southern shore of Great Slave Lake in the southern Northwest Territories.

The sulphides seen in core, with one exception, comprise small amounts of pyrite filling small fractures, and as nodules and stratification-parallel pyrite accumulations, often associated with fossil detritus.

The only significant amount of pyrite found is associated with fault-controlled breccia and synchronous coarse calcite infilling across approximately 1 m, at 256 to 257 m depth, in Jean Marie Member, Redknife Formation dolostone in well Calstan Senex 4-3-100-7 (04-03-100-07W5). This pyritiferous zone is not associated with anomalous Pb or Zn concentrations, but is associated with elevated amounts of As (up to 383.4 ppm), Tl (up to 3.4 ppm) and Mo (up to 56.8 ppm) that are an order of magnitude greater than most surrounding tabulated data for other core samples.

Appendix D contains selected core photos of the brecciated interval in well Calstan Senex 04-03-100-07W5.

5 Conclusions

The wells examined during the 2002 core-logging program found no features that would support or indicate the possibility for an important MVT Pb-Zn deposit in Devonian carbonates in northeastern Alberta. The most interesting feature was the narrow pyritiferous breccia found in well Calstan Senex 04-03-100-07W5.

These results could indicate the probability for an important MVT deposit to be low, but it must be remembered that any attempt to evaluate the MVT Pb-Zn potential of northeastern Alberta is plagued by the problem of very poor exposure. As well, the large area of carbonates that underlie Wood Buffalo National Park, with their favourable structural and basin margin position, are nonetheless excluded from meaningful investigation due to being within a national park. Finally, the amount of rock available for examination and sampling from existing well core is extremely small.

Therefore, although the 2002 core program looked at a large number of wells, the relative areal sparseness of the data gathered indicate it cannot be considered as representative of the large area involved. Further, even though the results in this report are not particularly supportive of an important MVT deposit being present in the carbonates in northeastern Alberta, the regions carbonate-hosted base metal potential remains poorly evaluated and, thus, a blind MVT deposit may well exist.

6 References

Machel, H.G. and Hunter, I.G. (1994): Facies models for Middle to Late Devonian shallow-marine carbonates, with comparisons to modern reefs: a guide for facies analysis; Facies, v. 30, p. 155-176.

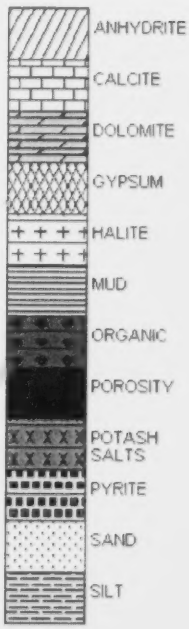
Rice, R.J. (2003): The carbonate-hosted Pb-Zn (MVT) project for northern Alberta - background and year one summary: a contribution to the carbonate-hosted Pb-Zn (MVT) Targeted Geoscience Initiative; Alberta Energy and Utilities Board, EUB/AGS Geo-Note 2002-19, 13 p.

Waters, E. J. and Rice, R. J. (2003): A GIS summary of field data gathered during year one (2001) of the carbonate-hosted Pb-Zn (MVT) project for northern Alberta: a contribution to the carbonate-hosted Pb-Zn (MVT) Targeted Geoscience Initiative; Alberta Energy and Utilities Board, EUB/AGS Geo-Note 2002-22.

Appendix A – Core Logs

Core logs produced during the 2002 core program are presented in this section. The legend for these core logs is presented as Figure 2. The reefal facies scheme for Middle to Late Devonian shallow-marine carbonates of Machel and Hunter (1994) that was used for carbonate facies identification is presented as Figure 3.

Abbreviations



Diagenesis/Tectonic Feature

Af –	Acicular fringe
Anhy –	Anhydrite nodules
B-e –	Bird's eyes
Bit –	Bituminous/bitumen
Brec –	Brecciation
BX –	Breccia
Cc –	Calcite cement
Dol –	Dolomite
Doln –	Dolomitization
Dolsp –	Dolospar
Dol lyr –	Thin dolomite layers
Ds –	Dissolution seams
Fr –	Fractures
Fr-anhy –	Fracture filling anhydrite
Lch –	Leaching
Lm nod –	Limestone nodules/irregular horizon
Msh –	Mesh of needles
Py -	Pyrite
Rs –	Rust stain
Rxtyl –	Recrystallization
SHR –	Shear
SL –	Slickenlines
Sp cc –	Sparry calcite
Styl --	Stylolites

Cement Type

A –	Anhydrite
B –	Bitumen
C –	Calcite
D –	Dolomite
G –	Gypsum
H –	Halite
S –	Silica

Colour

B -	Brown
LB –	Light Brown
MB –	Medium Brown
DB –	Dark Brown
Bk -	Black
G –	Grey
LG –	Light Grey
MG –	Medium Grey
DG –	Dark Grey
Gn -	Green
LGn –	Light Green
MGn –	Medium Green
DGn –	Dark Green
O -	Orange
LO –	Light Orange
MO –	Medium Orange
DO –	Dark Orange
Prpl -	Purple
R -	Red
LR –	Light Red
MR –	Medium Red
DR –	Dark Red
T -	Translucent
Tr -	Transparent
W -	White
Y –	Yellow
LY –	Light Yellow
MY –	Medium Yellow
DY -	Dark Yellow

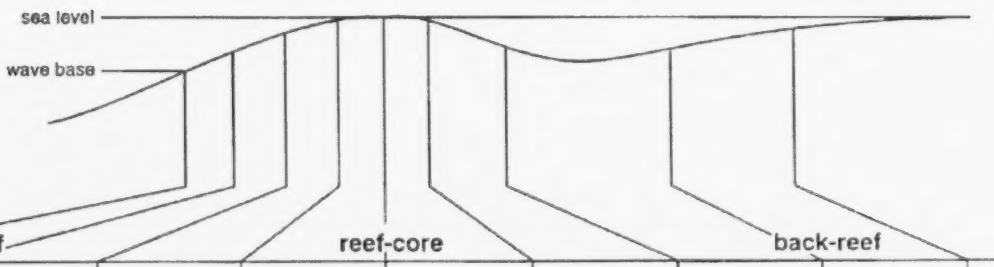
Rock Composition



Nature of Contact

B –	Gradational Interbedded
BU –	Burrowed
D -	Disconformity
FLT -	Faulted
G –	Gradational
NC –	Nonconformity
NO –	Not Observed
S –	Sharp
SC –	Sharp Conformable
SD –	Sharp Disconformable
SI –	Sharp Irregular
ST –	Stylolite
U –	Unconformity
VS –	Visibly Scoured

Figure 2. Core log legend for wells examined during the 2002 core program.

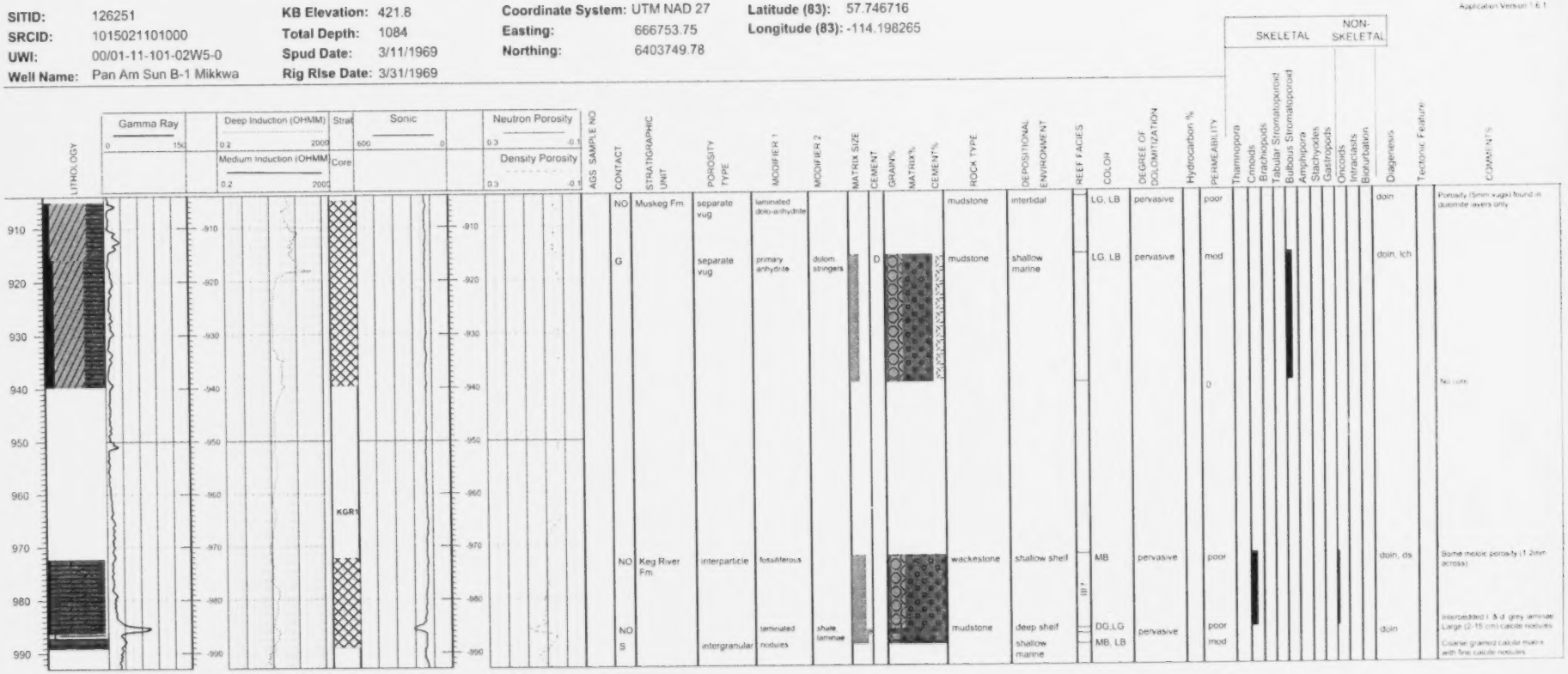


FACIES ZONE	If	IIf	IIIf	IVf	IV/V	V	IVb	IIIb	IIb	Ib
WATER ENERGY	quiet water below wave base negligible turbulence	intermittently agitated water episodic turbulence	slightly agitated water moderate turbulence	moderately agitated water strong turbulence	strongly agitated water strong turbulence		moderately agitated water strong turbulence	slightly agitated water moderate turbulence	intermittently agitated water episodic turbulence	intermittently agitated water episodic turbulence
ROUNDING	mostly original fossil shapes	poor to good	moderate to good	good to moderate	very good to moderate		good to moderate	moderate to good	poor to good	mostly original fossil shapes
SORTING	angular fragments if broken	matrix: good fossils:poor to good	matrix: moderate fossils: moderate to good	good to moderate	matrix: moderate fossils: poor		good to moderate	matrix: moderate fossils: moderate to good	matrix: good fossils:poor to good	angular fragments if broken
TEXTURE	packstone grainstone wackestone	packstone grainstone rare floatstone	floatstone grainstone rare rudstone	rudstone baffestone	rudstone bindstone rare grainstone	bindstone framestone rudstone	rudstone baffestone	floatstone grainstone rare rudstone	packstone grainstone	mudstone wackestone
AMOUNT OF MICRITE	primary micrite increasing ◀◀◀				fibrous calcite, sparite, micrite		▶▶▶ primary micrite increasing			
POROSITY TYPES	intraparticle	intraparticle interparticle	interparticle shelter voids intraparticle	shelter voids growth framework interparticle	shelter voids interparticle	shelter voids growth framework interparticle	shelter voids growth framework interparticle	shelter voids intraparticle interparticle fenestral	intraparticle interparticle fenestral	intraparticle fenestral
SIZE OF PORES		small	medium to small	medium to small	large to medium	medium to small	medium to small	medium to small	small	
AMOUNT OF POROSITY	below 10%	up to 10% but mostly below 5%	up to 15%	up to 10%	up to 25%	up to 10%	up to 40%	up to 10%	up to 20%	up to 30%
FOSSIL ASSEMBLAGE	calcispheres foraminifers	small crinoids	large crinoids	tabulate corals *Stachyodes* brachiopods crinoids	crinoids tabular stromatoporoids	bulbous & massive stromatoporoids	*Stachyodes* *Girvanella* *Renalcis*	*Amphipora* *Parathurammina* ostracods	algae (fenestral pores = "birdseyes")	algae (fenestral laminites)
INDICATOR FOSSILS	crinoids / gonlatites / brachiopods				crinoids *Solenopora* *Keega*		*Amphipora* / calcispheres / *Parathurammina* / *Vermiporella* / encrusting *Sphaerocodium*			
CARBONATE FACIES TYPE	fossil-poor wackestone and mudstone	crinoid-stromatoporoid floatstone, grainstone, packstone	crinoid-stromatoporoid floatstone and rudstone	*Stachyodes*-coral-stromatoporoid baffle- and rudstone	stromatoporoid-coral bindstone and rudstone	stromatoporoid framestone and bindstone	*Stachyodes* rudstone, baffiestone and floatstone	*Amphipora* floatstone, grainstone, rare rudstone	fossil poor packstone and wackestone	fenestral laminite mudstone and wackestone

Figure 3. Reefal facies model scheme for Middle to Late Devonian Shallow marine carbonates from Machel and Hunter, 1994.

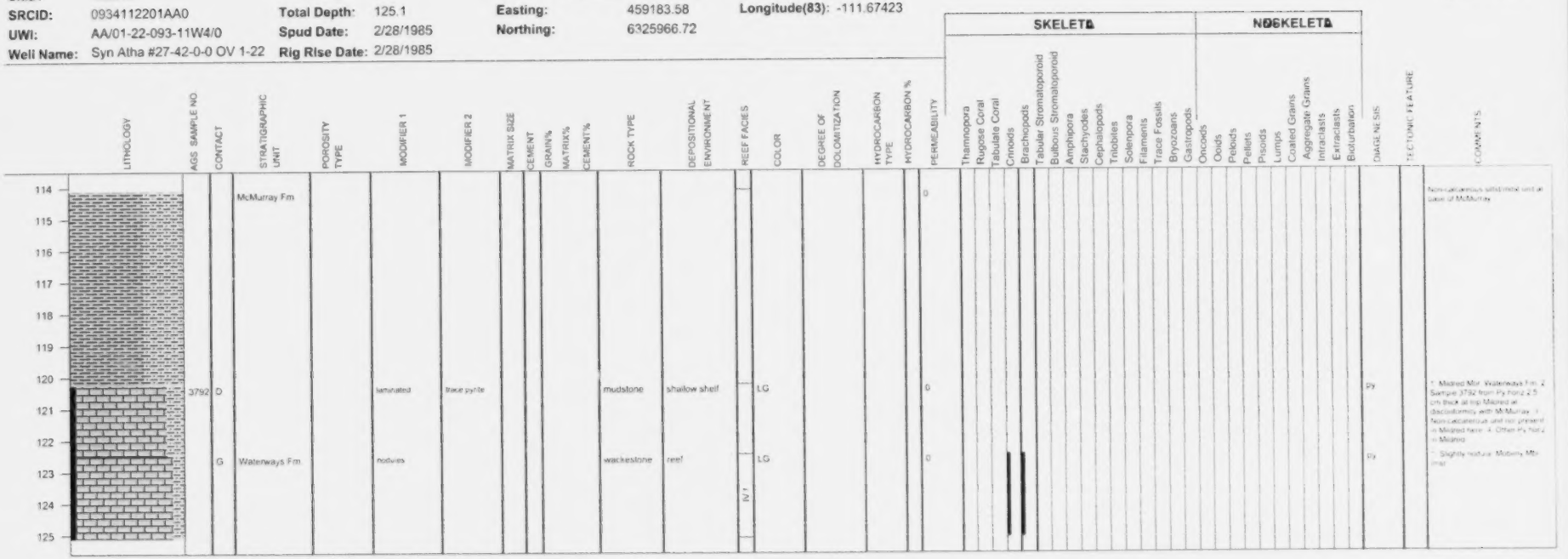
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Application Version 1.6.1

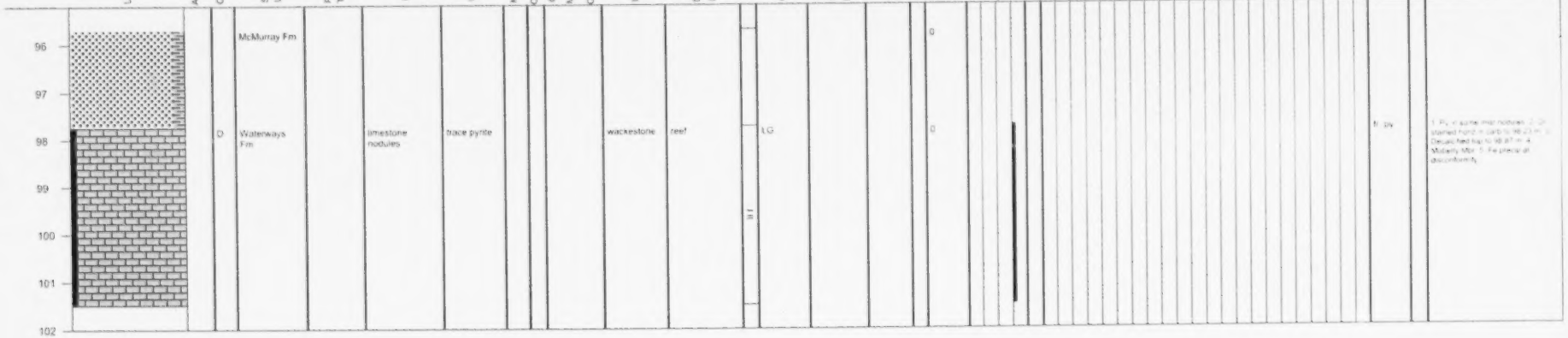


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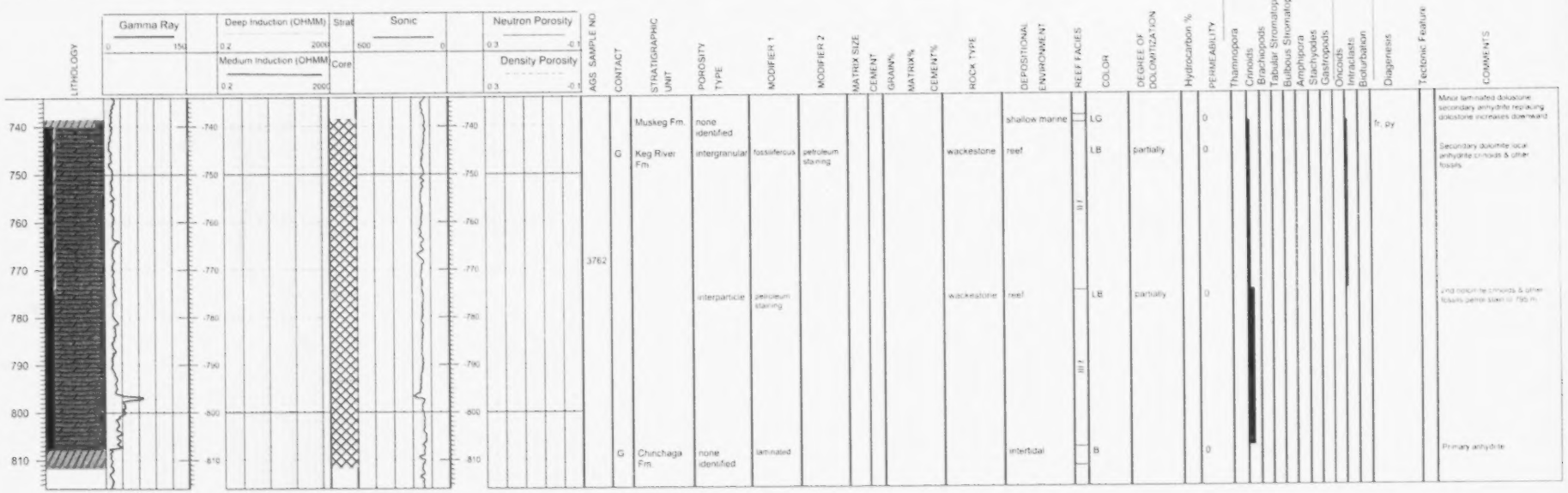
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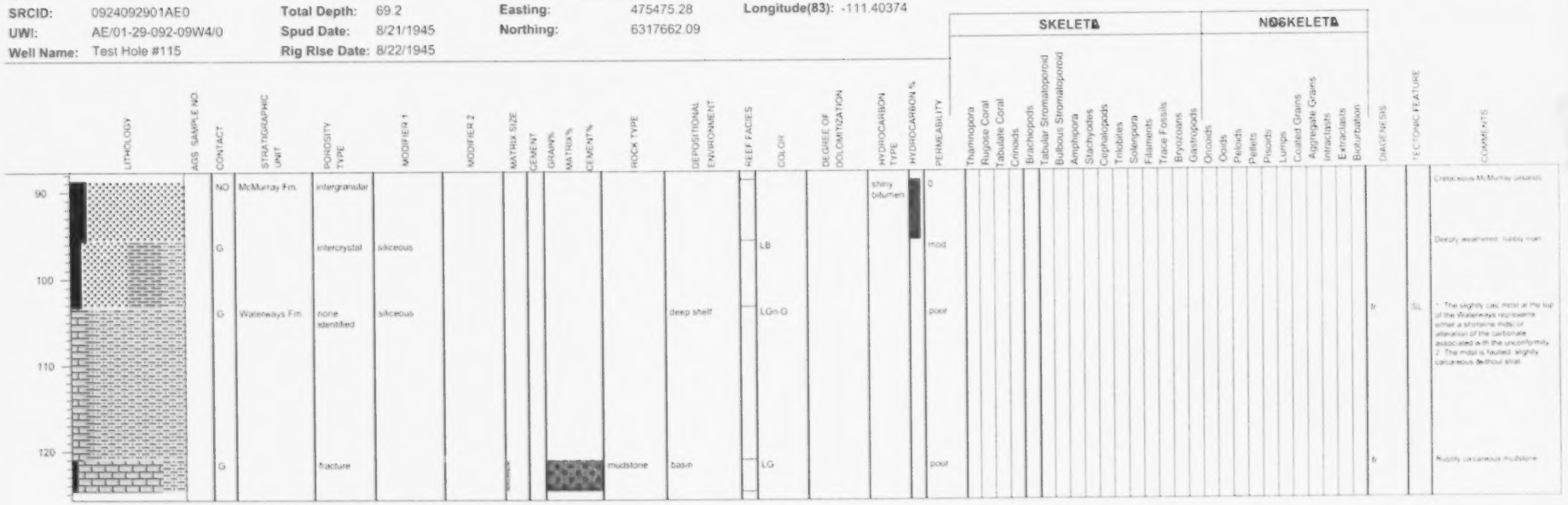


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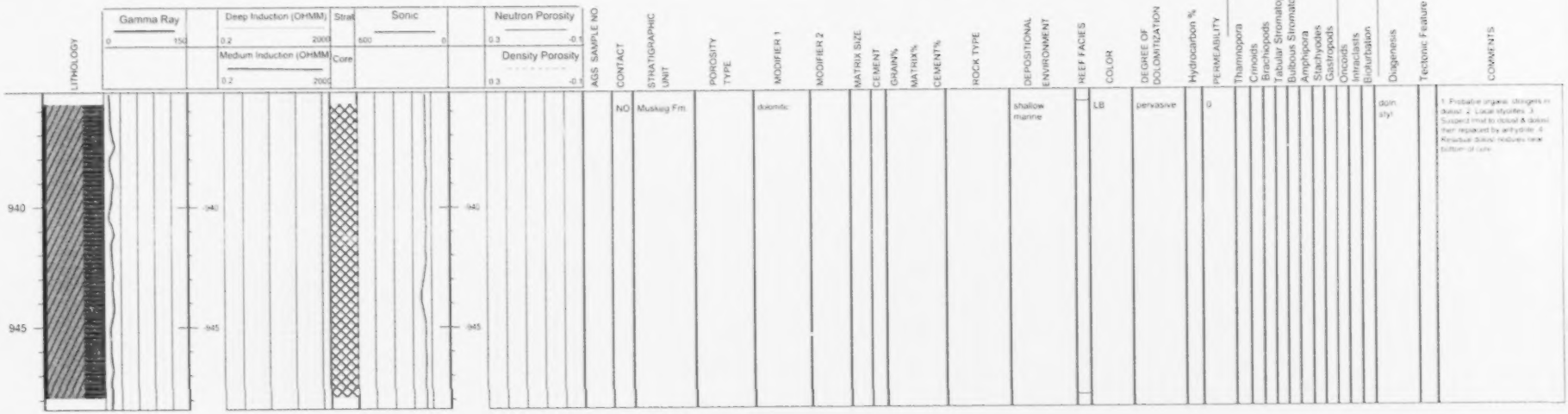


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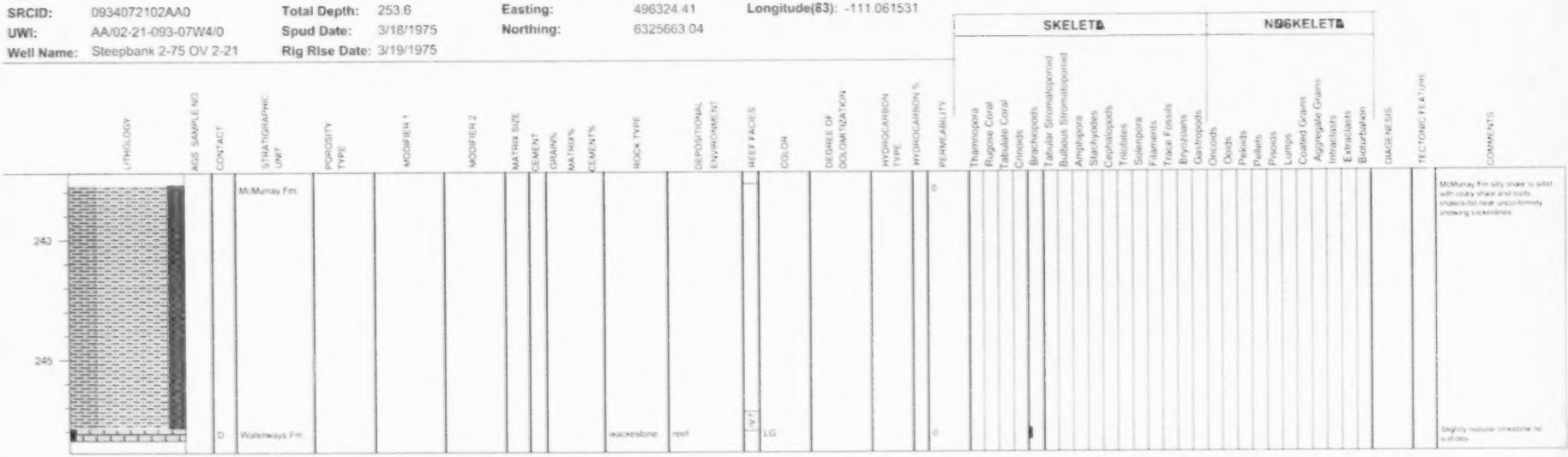
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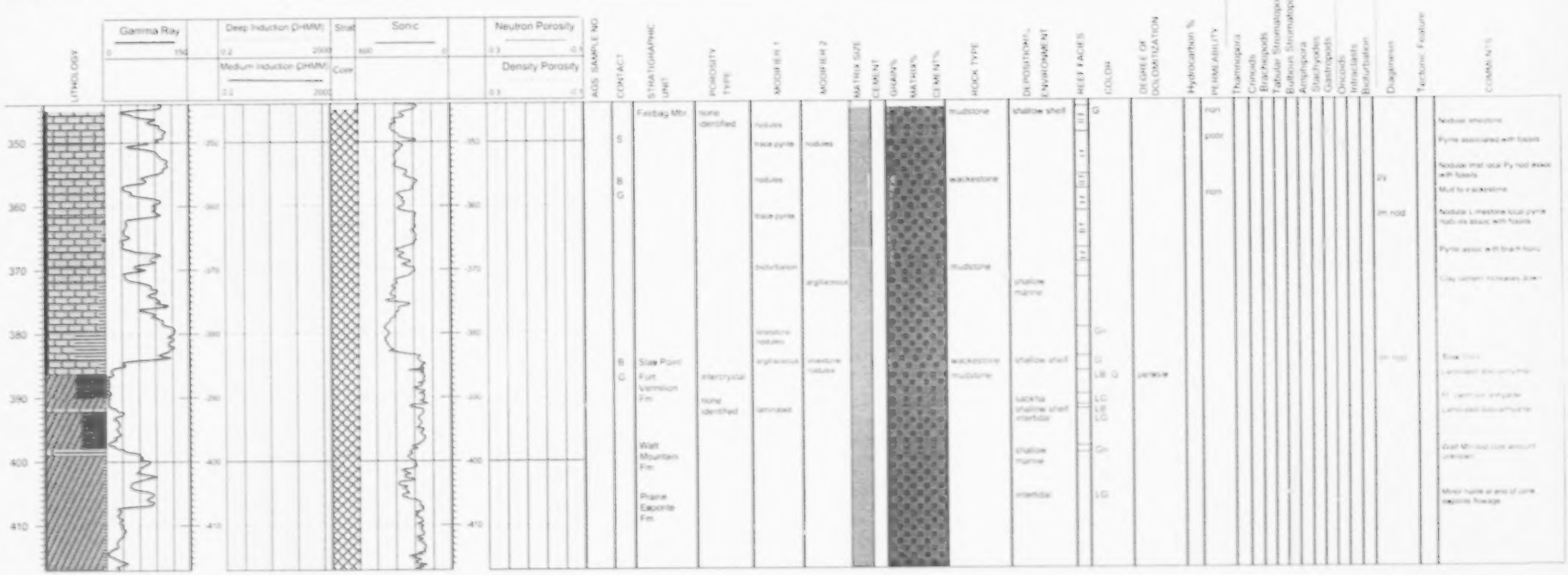
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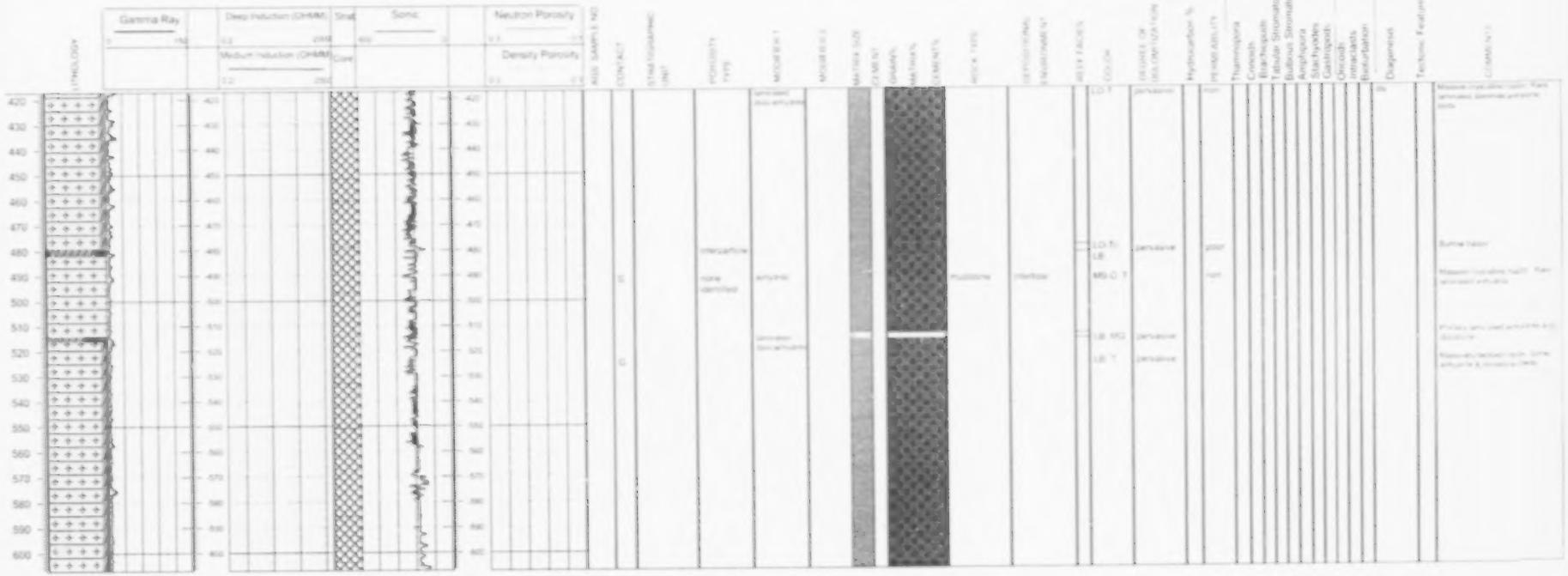
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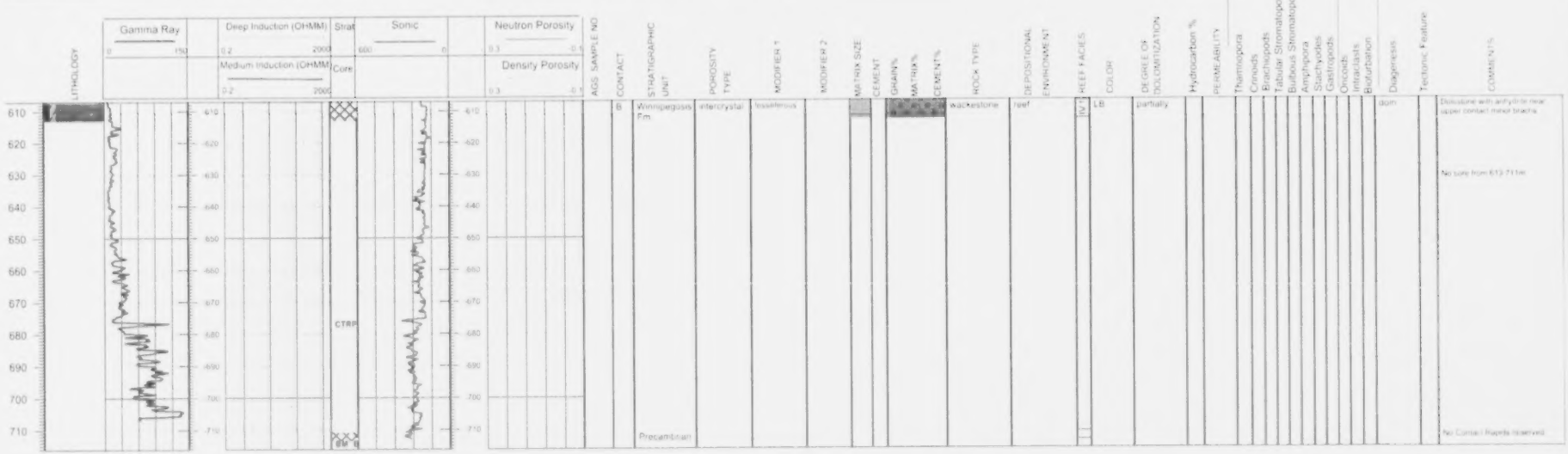
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UWI:	00-02-32-089-12W4/2	**Spud Date:**	2/25/1981	**Northing:**	6290601.28		
Well Name:	Suncore Clarke	**Rig Rlse Date:**					



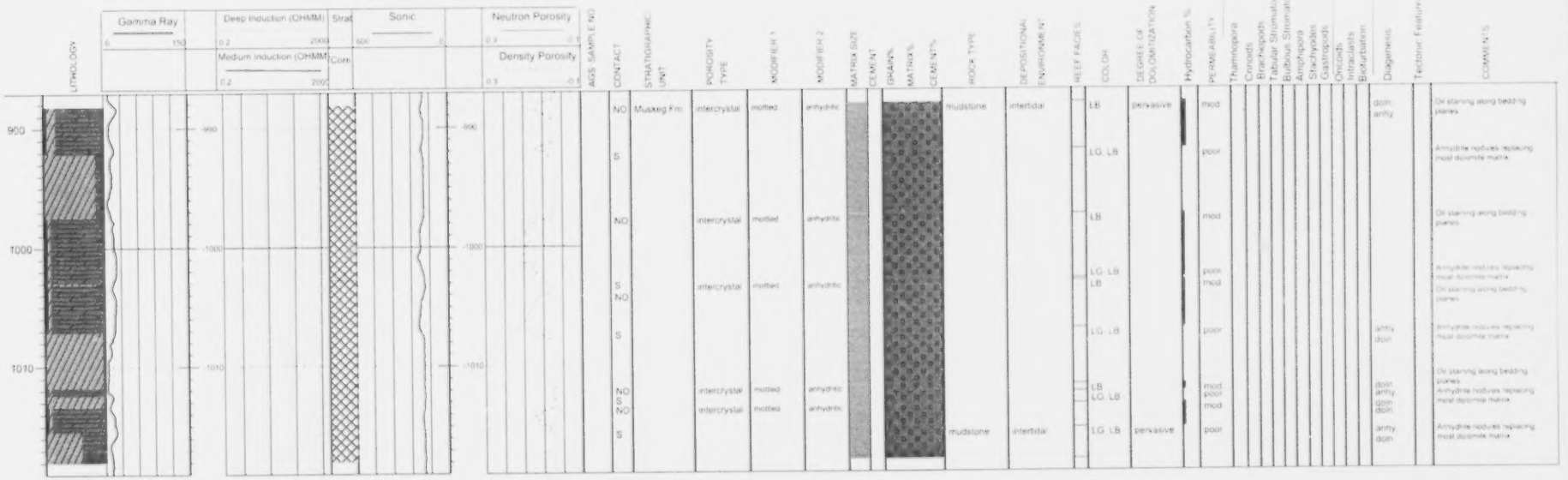
SITID:	117821	**KB Elevation:**	528.9	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	56.75834
SRCID:	894123202000	**Total Depth:**	717	**Easting:**	446711.89	**Longitude (83):**	-111.87249
UWI:	00-02-32-089-12W4/2	**Spud Date:**	2/25/1981	**Northing:**	6290601.28		
Well Name:	Suncore Clarke	**Rig Rlse Date:**					



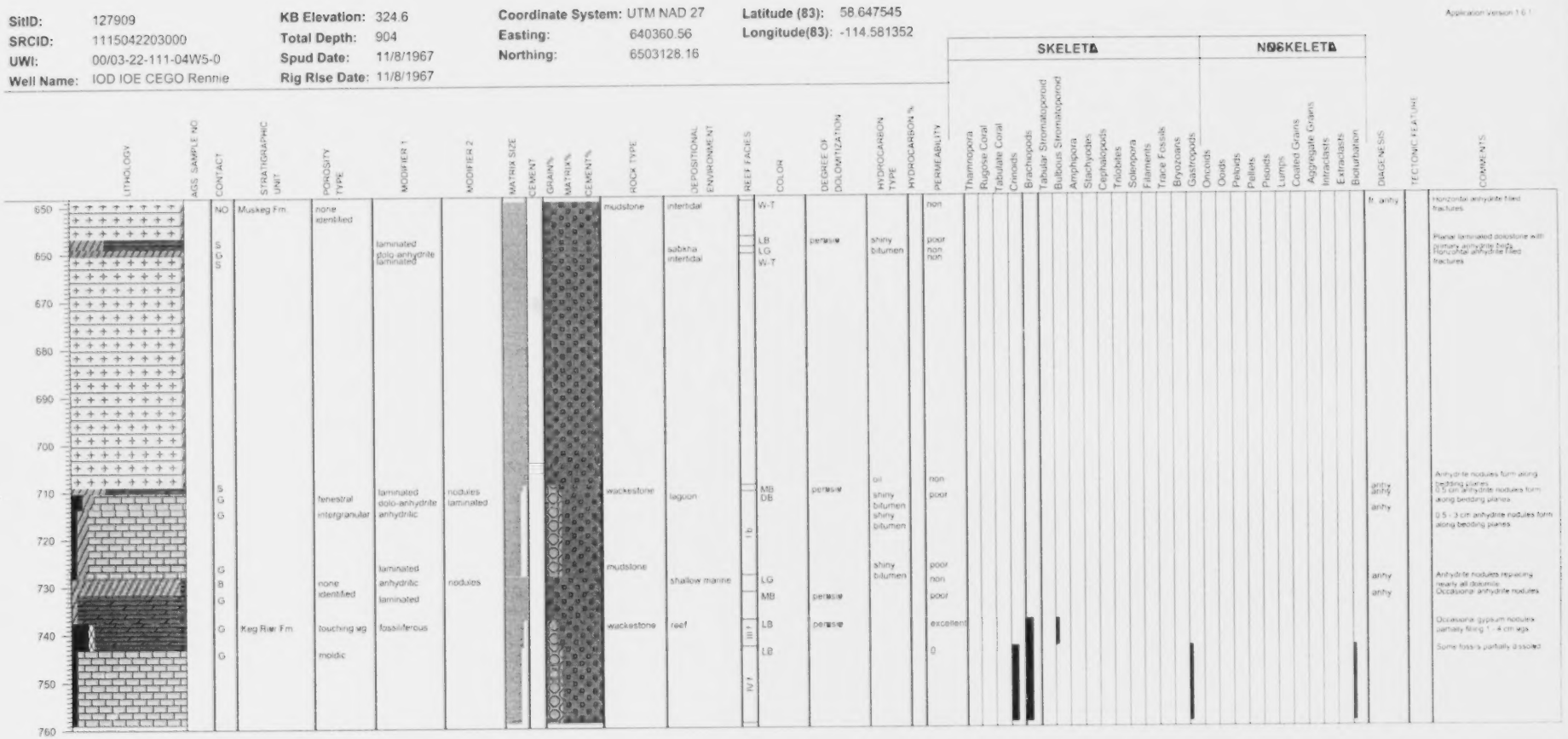
SITID:	117821	**KB Elevation:**	528.9	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	56.75834
SRCID:	894123202000	**Total Depth:**	717	**Easting:**	446711.89	**Longitude (83):**	-111.87249
UWI:	00-02-32-089-12W4/2	**Spud Date:**	2/25/1981	**Northing:**	6290601.28		
Well Name:	Suncore Clarke	**Rig Rlse Date:**					



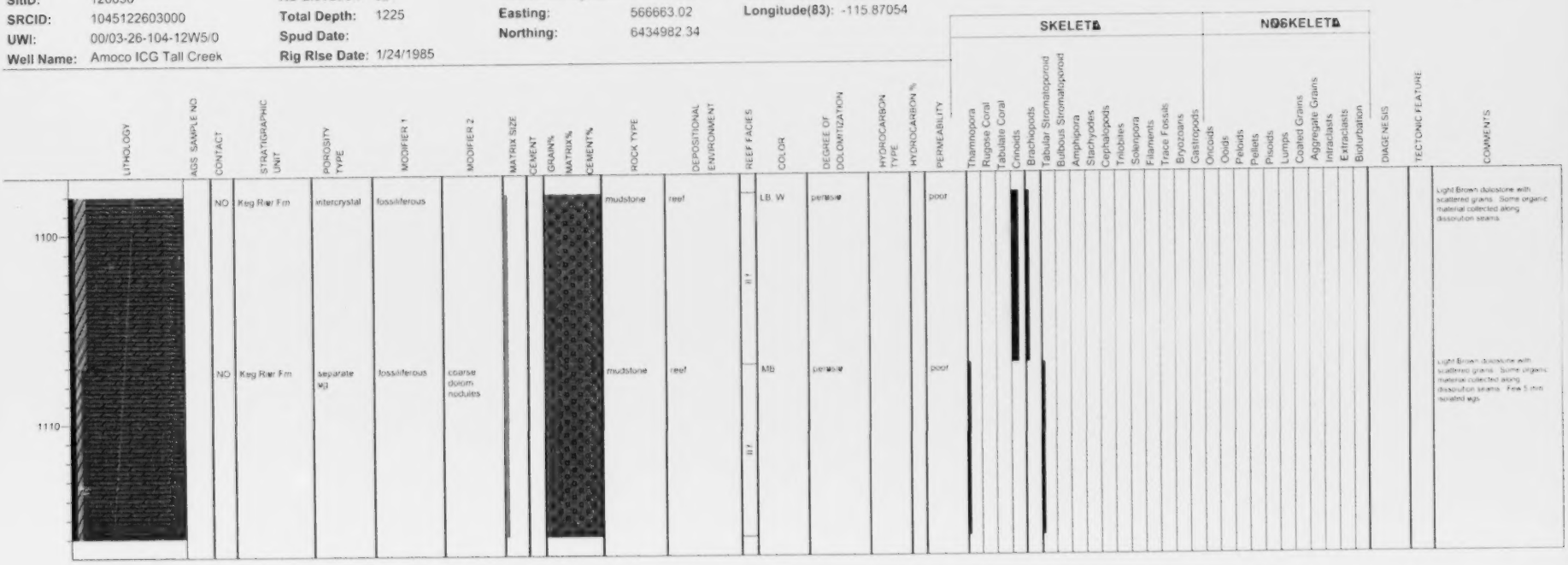
SITID:	126252	**KB Elevation:**	395.3	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.7463090022162
SRCID:	1015050703000	**Total Depth:**	1147	**Easting:**	630294.37	**Longitude (83):**	-114.811012999798
UWI:	00/03-07-101-05W5/00	**Spud Date:**	1/14/1970	**Northing:**	6402360.69		
Well Name:	FPC Noel et al. Harper	**Rig Rlse Date:**	2/10/1970				



SitID:	127909	**KB Elevation:**	324.6	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.647545
SRCID:	1115042203000	**Total Depth:**	904	**Easting:**	640360.56	**Longitude(83):**	-114.581352
UWI:	00/03-22-111-04W5-0	**Spud Date:**	11/8/1967	**Northing:**	6503128.16		
Well Name:	IOD IOE CEGO Rennie	**Rig Rise Date:**	11/8/1967				

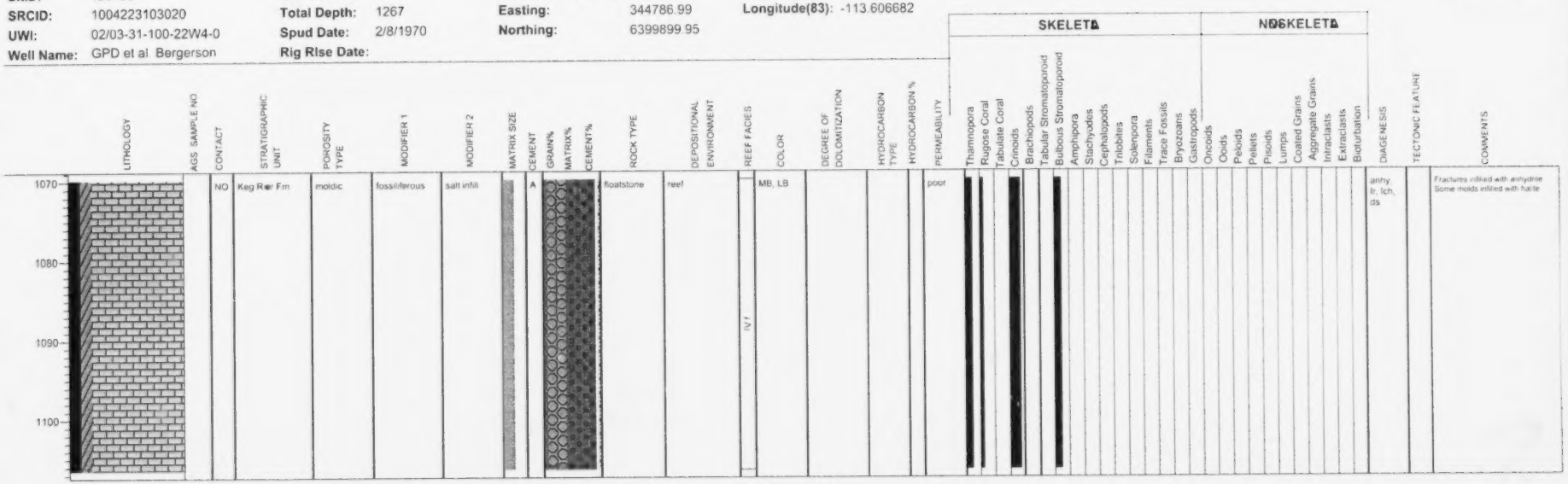


SitID:	126636	**KB Elevation:**	321	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.05322
SRCID:	1045122603000	**Total Depth:**	1225	**Easting:**	566663.02	**Longitude(83):**	-115.87054
UWI:	00/03-26-104-12W5/0	**Spud Date:**		**Northing:**	6434982.34		
Well Name:	Amoco ICG Tall Creek	**Rig Rlse Date:**	1/24/1985				



SitID:	126168	**KB Elevation:**	716.6	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.716415
SRCID:	1004223103020	**Total Depth:**	1267	**Easting:**	344786.99	**Longitude(83):**	-113.606682
UWI:	02/03-31-100-22W4-0	**Spud Date:**	2/8/1970	**Northing:**	6399899.95		
Well Name:	GPD et al Bergerson	**Rig Rlse Date:**					

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SitID:	122091	**KB Elevation:**	281.5	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.192688
SRCID:	0944103303AA0	**Total Depth:**	35.7	**Easting:**	466690.23	**Longitude(83):**	-111.551163
UWI:	AA/03-33-094-10W4/0	**Spud Date:**	1/17/1980	**Northing:**	6338757.96		
Well Name:	Syncrude 1 Hartley OV	**Rig Rise Date:**	1/18/1980				

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LITHOLOGY	AGS SAMPLE NO	CONTACT	STRATIGRAPHIC UNIT	POROSITY TYPE	MODIFIER 1	MODIFIER 2	MATRIX SIZE	CEMENT	GRAIN%	MATRIX%	CEMENT%	ROCK TYPE	DEPOSITIONAL ENVIRONMENT	REEF FACIES	COLOR	DEGREE OF DOLOMITIZATION	HYDROCARBON TYPE	HYDROCARBON %	PERMEABILITY	SKELETAL: Thamnopora	Rugose Coral	Tabulate Coral	Crinoids	Brachiopods	Tabular Stromatoporoid	Bulbous Stromatoporoid	Amphipora	Stachyodes	Cephalopods	Trilobites	Solenpora	Filaments	Trace Fossils	Bryozoans	Gastropods	NON-SKELETAL: Ooloids	Ooids	Peloids	Pellets	Pisoids	Lumps	Coated Grains	Aggregate Grains	Intraclasts	Extraclasts	Bioturbation	DIAGENESIS	TECTONIC FEATURE	COMMENTS
		NO SD	McMurray Fm. Waterways Fm	fracture	interbedded	limestone nodules						mudstone	deep shelf		LB		shiny bitumen		0 poor																																	
		NO			interbedded	limestone nodules						mudstone	deep shelf		LB		solid bitumen		mod																																					
		SD		fracture	mottled	limestone nodules						mudstone	deep shelf		LB		shiny bitumen		poor																																				

10

20

30

lm nod fr

lm nod ds

lm nod fr

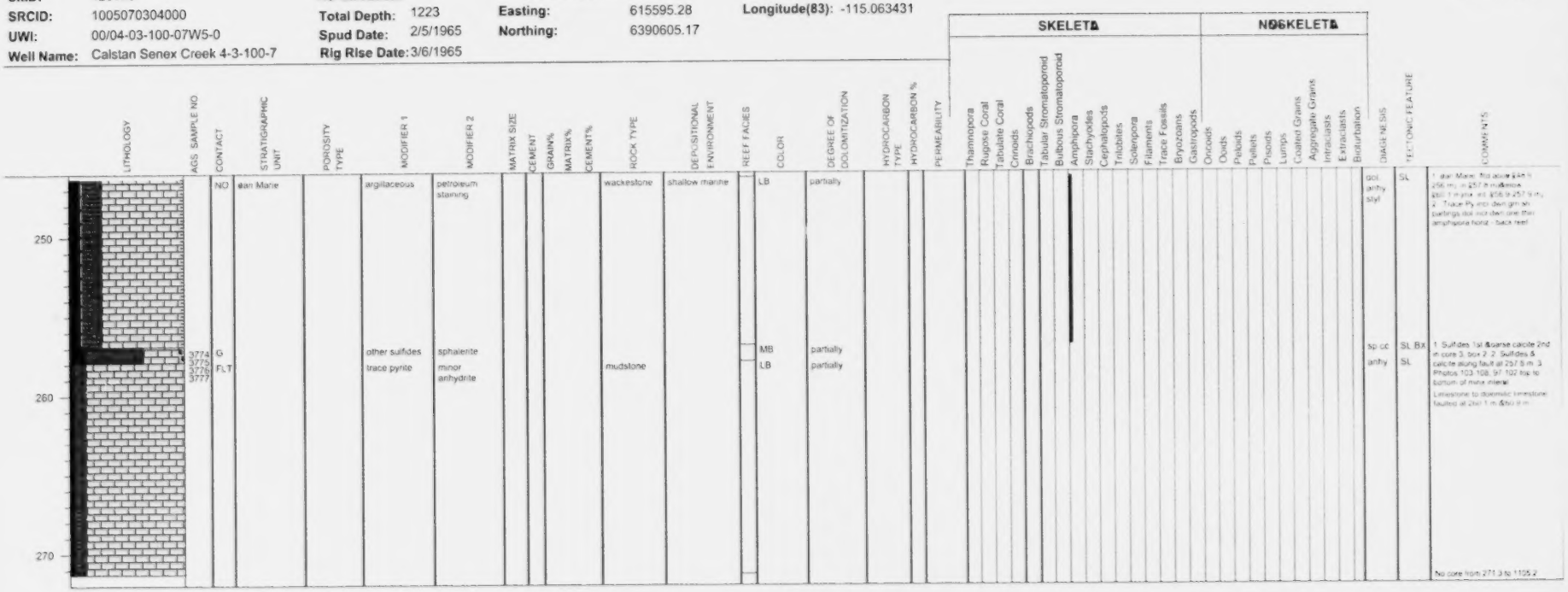
Cretaceous McMurray (Inland Cretaceous siltstone) Siltstone and 4 cm grey - dark interbedded nodular limestone and calcareous shale. Bitumen in fractures

Light brown muddy limestone with petroleum staining

Sporatic petroleum staining

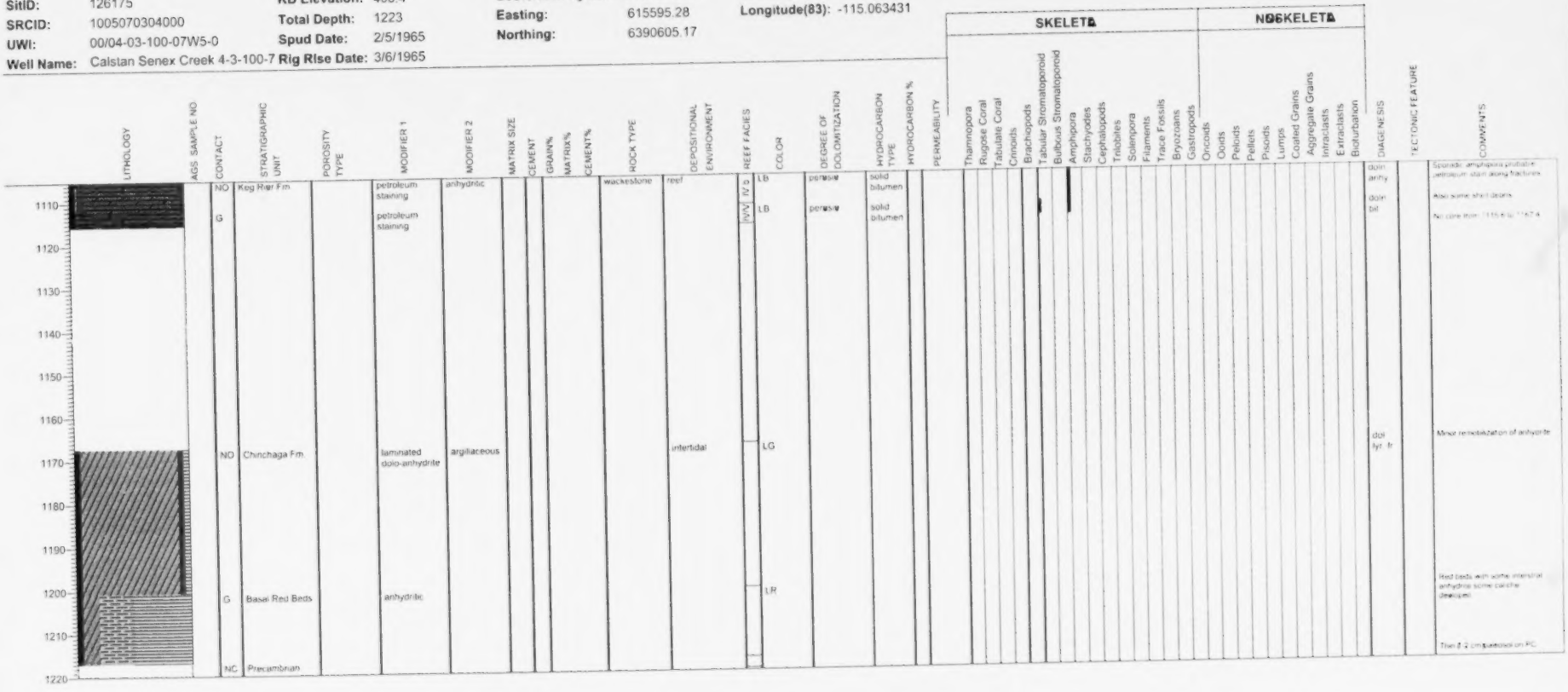
SitID:	126175	**KB Elevation:**	405.4	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.644802
SRCID:	1005070304000	**Total Depth:**	1223	**Easting:**	615595.28	**Longitude(83):**	-115.063431
UWI:	00/04-03-100-07W5-0	**Spud Date:**	2/5/1965	**Northing:**	6390605.17		
Well Name:	Calstan Senex Creek 4-3-100-7	**Rig Rise Date:**	3/6/1965				

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SitID:	126175	**KB Elevation:**	405.4	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.644802
SRCID:	1005070304000	**Total Depth:**	1223	**Easting:**	615595.28	**Longitude(83):**	-115.063431
UWI:	00/04-03-100-07W5-0	**Spud Date:**	2/5/1965	**Northing:**	6390605.17		
Well Name:	Calstan Senex Creek 4-3-100-7	**Rig Rlse Date:**	3/6/1965				



SitID: 124109
SRCID: 0964090704AA0
UWI: 00/04-07-096-09W4/0
Well Name: Alsands 18 Hangst OV

KB Elevation: 296.4
Total Depth: 119.8
Spud Date: 2/25/1981
Rig Rise Date: 2/26/1981

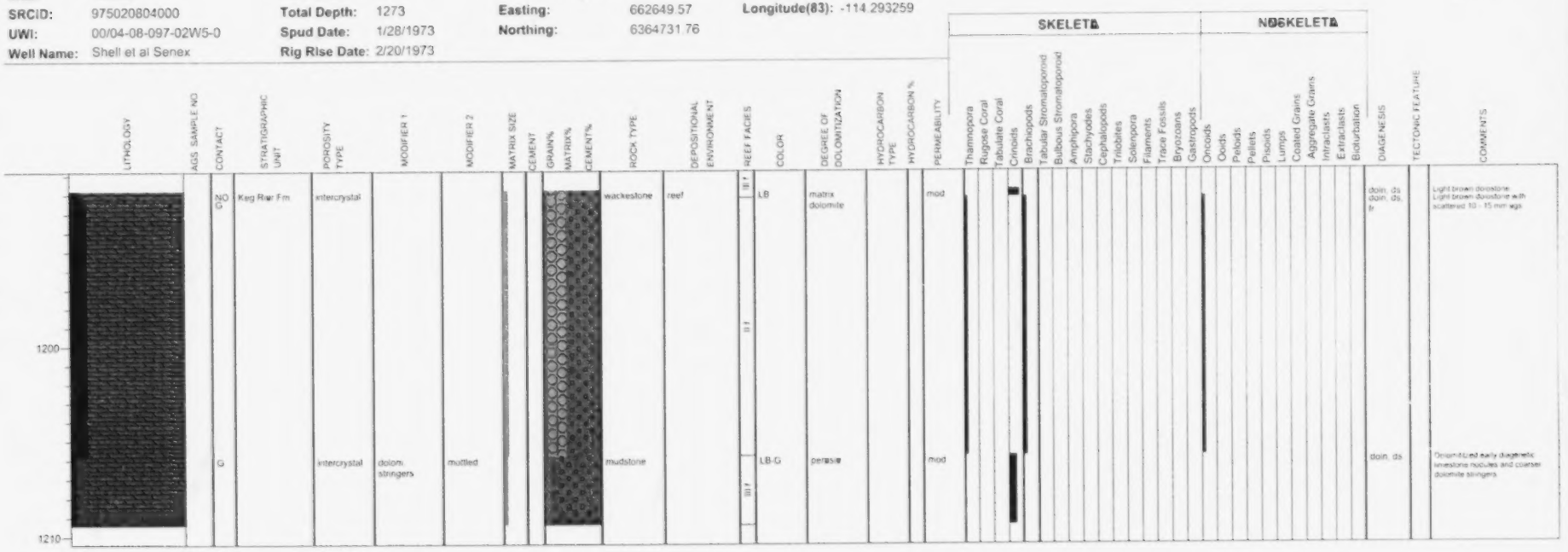
Coordinate System: UTM NAD 27
Easting: 471910.42
Northing: 6351913.55

Latitude (83): 57.31121
Longitude(83): -111.46628

Application Version 1.6.1

LITHOLOGY	AGS SAMPLE NO.	CONTACT	STRATIGRAPHIC UNIT	POROSITY TYPE	MODIFIER 1	MODIFIER 2	MATRIX SIZE	CEMENT	GRAIN%	MATRIX%	CEMENT%	ROCK TYPE	DEPOSITIONAL ENVIRONMENT	REEF FACIES	COLOR	DEGREE OF DOLOMITIZATION	HYDROCARBON TYPE	HYDROCARBON %	PERMEABILITY	SKELETAL: Thamnopora	Rugose Coral	Tabulate Coral	Crinoids	Brachiopods	Tabular Stromatoporoid	Bulbous Stromatoporoid	Amphipora	Stachyodes	Cephalopods	Trilobites	Solenopra	Filaments	Trace Fossils	Bryozoans	Gastropods	NON-SKELETAL: Oncoids	Ooids	Peloids	Pellets	Pisoids	Lumps	Coated Grains	Aggregate Grains	Intraclasts	Extraclasts	Bioturbation	DIAGENESIS	TECTONIC FEATURE	COMMENTS
		NO	McMurray Fm.	intergranular															0																												Cretaceous McMurray sandstone
																																																No core
110		NO	Beaverhill Lake Fm.	fracture	nodules	trace pyrite						mudstone	shallow marine		LG-Prpl				poor																														Purple stained shale
	3785																		0																												No core
	3786	NO		fracture	nodules	trace pyrite						mudstone	shallow marine		LG				poor																										Int rd		
																			0																												No core
120		NO SD	McMurray Fm. Waterways Fm.	intergranular fracture	nodules	trace pyrite						mudstone	shallow marine		MB LG				poor																										Vy. N			Cretaceous McMurray sandstone Limestone with pyrite nodules

SitID:	125586	**KB Elevation:**	591.6	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.398136
SRCID:	975020804000	**Total Depth:**	1273	**Easting:**	662649.57	**Longitude(83):**	-114.293259
UWI:	00/04-08-097-02W5-0	**Spud Date:**	1/28/1973	**Northing:**	6364731.76		
Well Name:	Shell et al Senex	**Rig Rlse Date:**	2/20/1973				



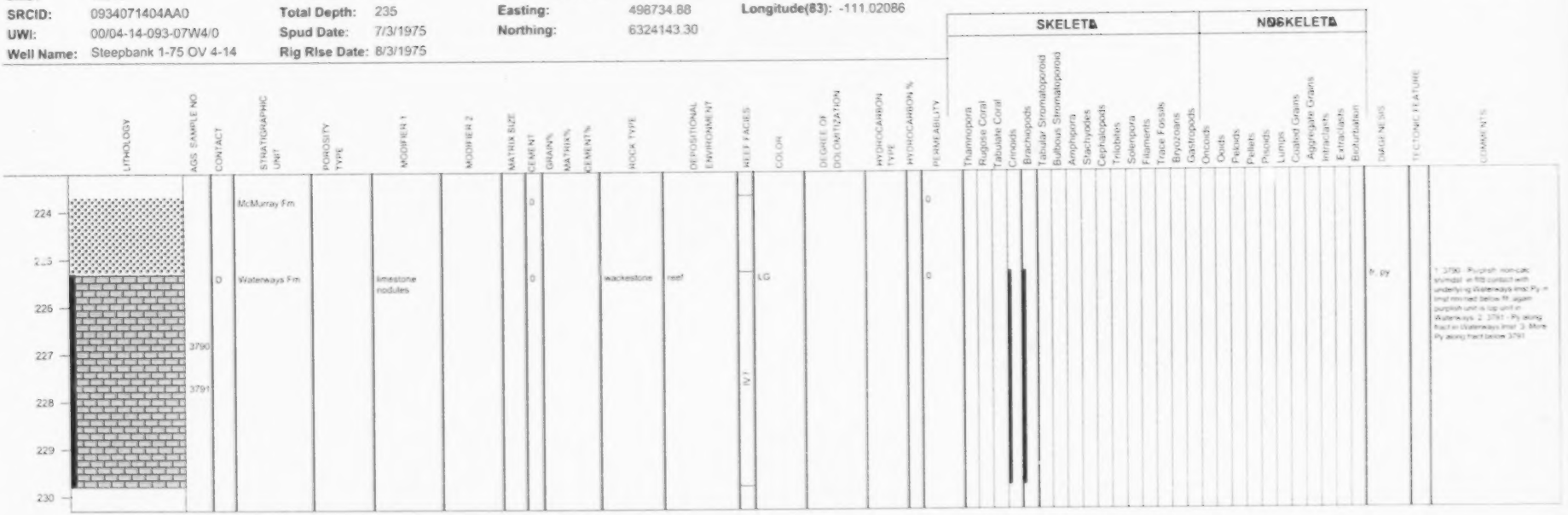
SitID:	324216	**KB Elevation:**		**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.5719092056802
SRCID:	0994061204AC0	**Total Depth:**	70.15	**Easting:**	509031.79	**Longitude(83):**	-110.849004926777
UWI:	AC/04-12-099-06W4/0	**Spud Date:**		**Northing:**	6380849.7		
Well Name:	Synenco 01-74 NLP 04-12-99-6	**Rig Rlse Date:**	2/3/2001				

Application Version: 16.1

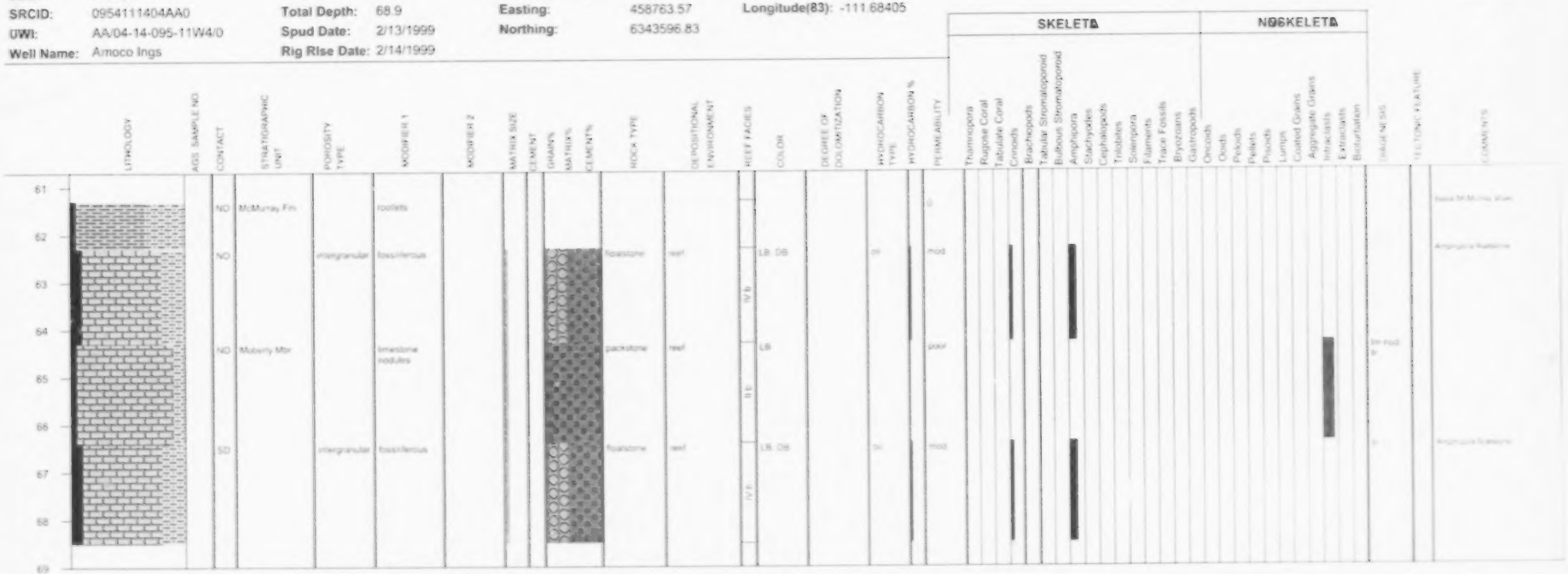
LITHOLOGY	AGS SAMPLE NO	CONTACT	STRATIGRAPHIC UNIT	POROSITY TYPE	MODIFIER 1	MODIFIER 2	MATRIX SIZE	CEMENT	GRAIN%	MATRIX%	CEMENT%	ROCK TYPE	DEPOSITIONAL ENVIRONMENT	REEF FACIES	COLOR	DEGREE OF DOLOMITIZATION	HYDROCARBON TYPE	HYDROCARBON %	PERMEABILITY	SKELETAL: Thamnopora	Rugose Coral	Tabulate Coral	Crinoids	Brachiopods	Tabular Stromatoporoid	Bulbous Stromatoporoid	Amphipora	Stachyodes	Cephalopods	Trilobites	Solenpora	Filaments	Trace Fossils	Bryozoans	Gastropods	NON-SKELETAL: Oncoids	Ooids	Peloids	Pellets	Fossils	Lumps	Coated Grains	Aggregate Grains	Intraclasts	Extraclasts	Bioturbation	DIAGENESIS	TECTONIC FEATURE	COMMENTS
		C	McMurray Fm																	0																														
		NC	Fireb ag Mbr		calcareous	rootlets							shallow marine		LG																																				Plattmud at top Fireb ag Mbr overlies Fm
																				0																														
					calcareous	rootlets						mudstone	shallow marine		LG																																				Plattmud cont's 2 3 boxes missing core assume 2 missing (Fm)
					calcareous	rootlets						mudstone	shallow marine		LG																																			Plattmud at top Fireb ag cont's possible rootlets
		G			argillaceous	laminated						wackestone	reef	N/I	LG					0																											bit, brec		Locally laminated to bedded locally brecciated
					argillaceous	way laminations						mudstone	shallow shelf		LG					0																											bit, brec		3 box missing core Possible algal laminations
		C	collapse breccia		argillaceous	bitumen stained						wackestone	shallow marine		LG					0																											bit, brec		Missing core assume 1 box 2.5 m) assume at base Fireb ag rather than top collapse bx Brachs locally in some clasts
					argillaceous	way laminations						mudstone	shallow marine		LG					0																											bit, brec		1 box missing core Possible algal lam in some clasts
					argillaceous	laminated						mudstone	shallow marine		LG					0																											bit, brec		1 box missing core 1. Some clasts with lam to way lam to brachs. 2. Non-bx wackestone interval with brachs at base of collapse bx

SitID:	120437	**KB Elevation:**	509.6	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.06261
SRCID:	0934071404AA0	**Total Depth:**	235	**Easting:**	498734.88	**Longitude(83):**	-111.02086
UWI:	00/04-14-093-07W4/0	**Spud Date:**	7/3/1975	**Northing:**	6324143.30		
Well Name:	Steepbank 1-75 OV 4-14	**Rig Rlse Date:**	8/3/1975				

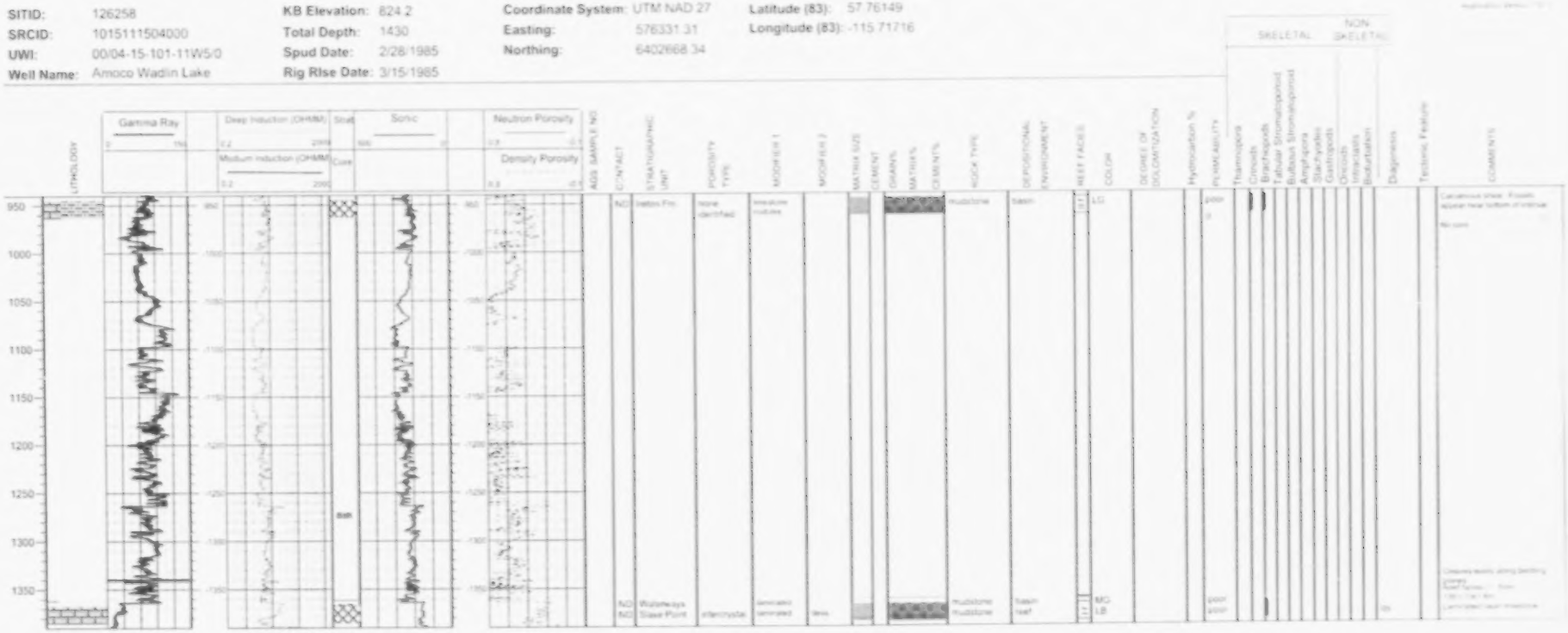
Application Version 16.1



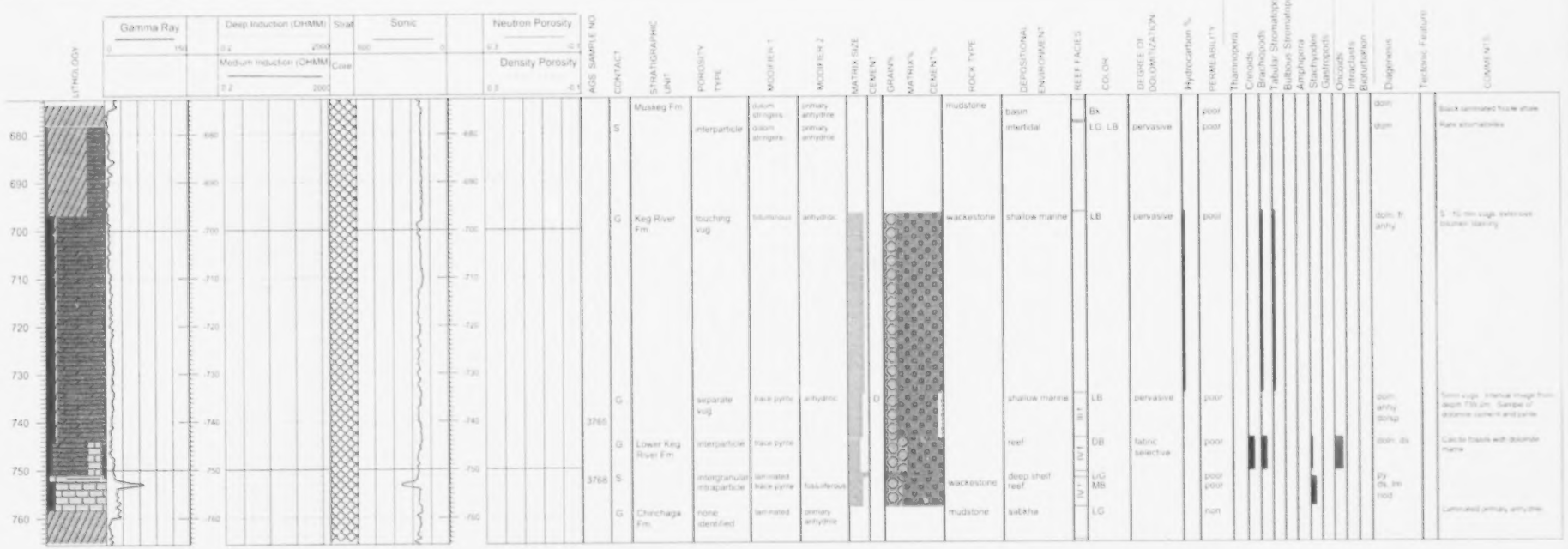
SitID:	276723	**KB Elevation:**	297.9	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.23562
SRCID:	0954111404AA0	**Total Depth:**	68.9	**Easting:**	458763.57	**Longitude(83):**	-111.68405
UWI:	AA/04-14-095-11W4/0	**Spud Date:**	2/13/1999	**Northing:**	6343596.83		
Well Name:	Amoco Ings	**Rig Rlse Date:**	2/14/1999				



SITID:	126258	**KB Elevation:**	824.2	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.76149
SRCID:	1015111504000	**Total Depth:**	1430	**Easting:**	576331.31	**Longitude (83):**	-115.71716
UWI:	00/04-15-101-11W5/0	**Spud Date:**	2/28/1985	**Northing:**	6402668.34		
Well Name:	Amoco Wadlin Lake	**Rig Rlse Date:**	3/15/1985				



SITID:	126624	**KB Elevation:**	291.1	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.051662
SRCID:	1045012604000	**Total Depth:**	856	**Easting:**	673880.20	**Longitude (83):**	-114.053619
UWI:	00/04-26-104-01W5-0	**Spud Date:**	12/26/1968	**Northing:**	6438046.23		
Well Name:	Mutex IOE Edra	**Rig Rlse Date:**	1/11/1969				

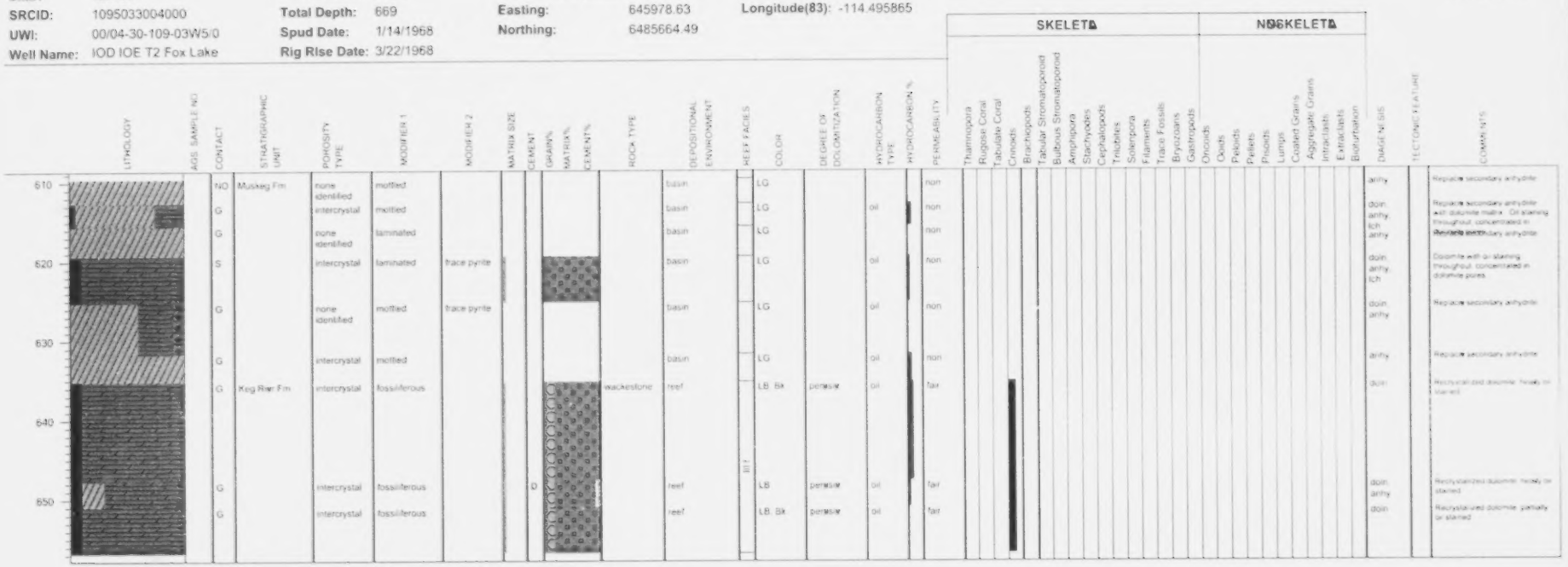


SitID:	120511	KB Elevation:	336.3	Coordinate System:	UTM NAD 27	Latitude (83):	57.0917
SRCID:	0934092804AA0	Total Depth:	138.1	Easting:	475983.44	Longitude(83):	-111.39631
UWI:	00/04-28-093-09W4/0	Spud Date:	2/3/1982	Northing:	6327451.09		
Well Name:	Esso 82 Oslo OV BSL-29	Rig Rlse Date:	3/3/1982				



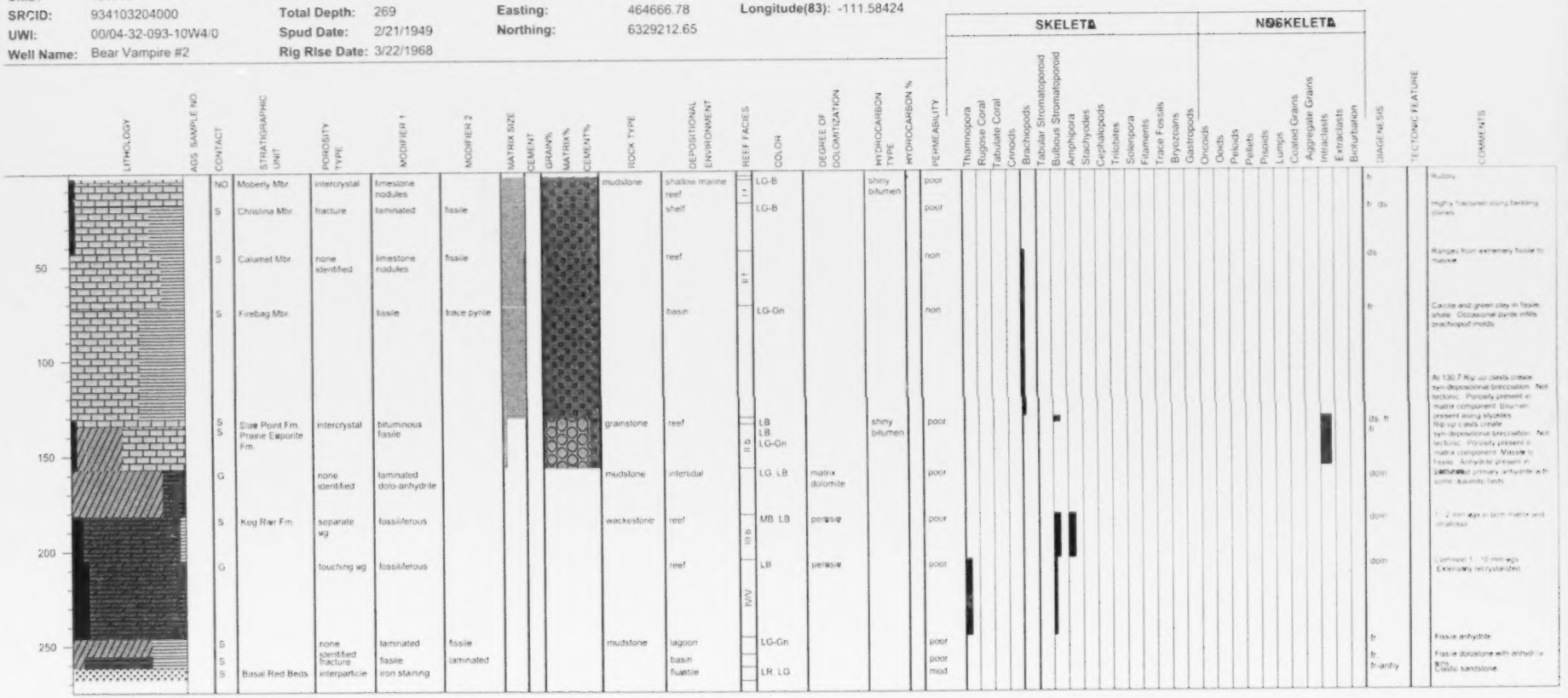
SitID:	127405	**KB Elevation:**	256.9	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.488998
SRCID:	1095033004000	**Total Depth:**	669	**Easting:**	645978.63	**Longitude(83):**	-114.495865
UWI:	00/04-30-109-03W5/0	**Spud Date:**	1/14/1968	**Northing:**	6485664.49		
Well Name:	IOD IOE T2 Fox Lake	**Rig Rlse Date:**	3/22/1968				

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SitID:	120758	**KB Elevation:**	241.7	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.10691
SRCID:	934103204000	**Total Depth:**	269	**Easting:**	464666.78	**Longitude(83):**	-111.58424
UWI:	00/04-32-093-10W4/0	**Spud Date:**	2/21/1949	**Northing:**	6329212.65		
Well Name:	Bear Vampire #2	**Rig Rlse Date:**	3/22/1968				

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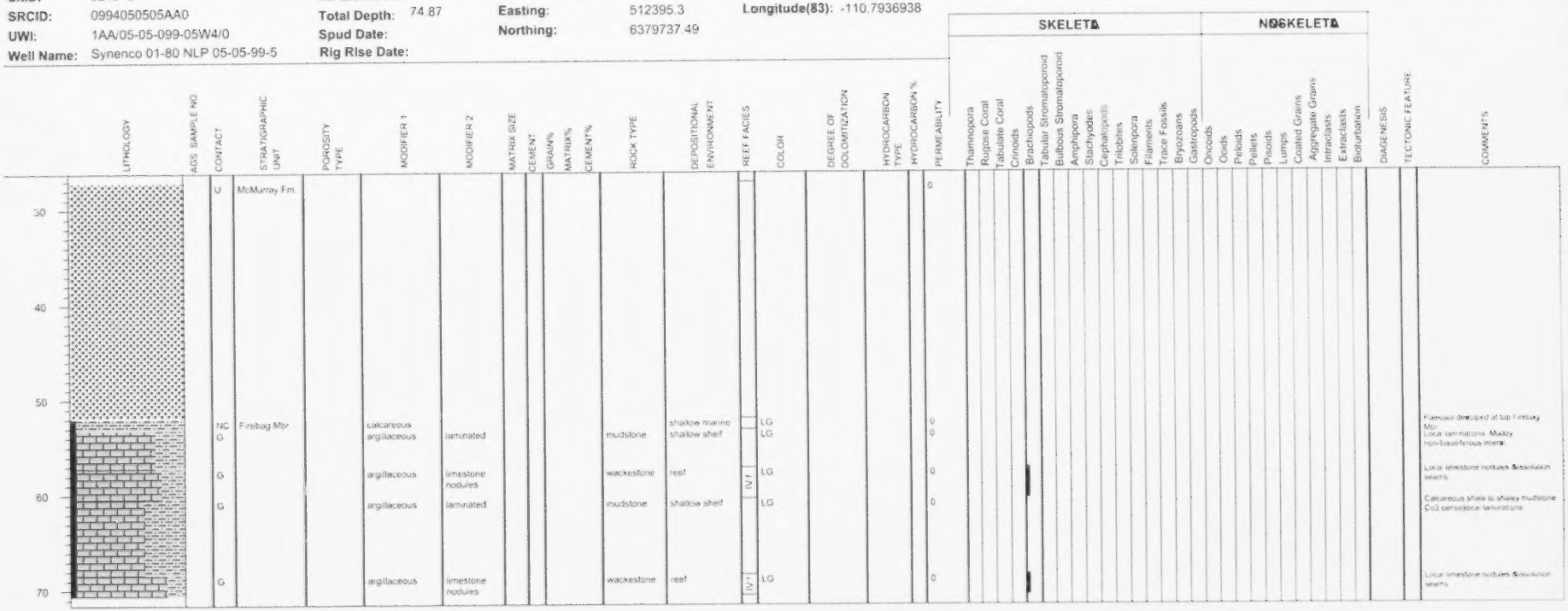


SitID: 324048
SRCID: 0994050505AA0
UWI: 1AA/05-05-099-05W4/0
Well Name: Synenco 01-80 NLP 05-05-99-5

KB Elevation:
Total Depth: 74.87
Spud Date:
Rig Rlse Date:

Coordinate System: UTM NAD 27
Easting: 512395.3
Northing: 6379737.49

Latitude (83): 57.56194401
Longitude(83): -110.7936938



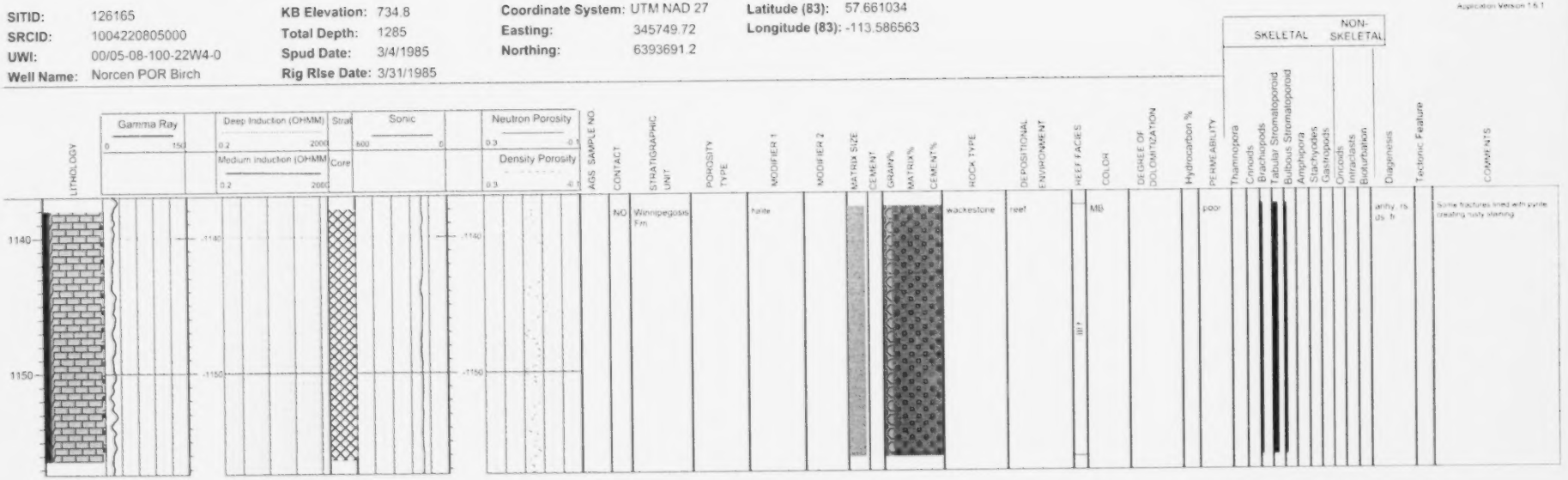
SITID: 126165
SRCID: 1004220805000
UWI: 00/05-08-100-22W4-0
Well Name: Norcen POR Birch

KB Elevation: 734.8
Total Depth: 1285
Spud Date: 3/4/1985
Rig RIse Date: 3/31/1985

Coordinate System: UTM NAD 27
Easting: 345749.72
Northing: 6393691.2

Latitude (83): 57.661034
Longitude (83): -113.586563

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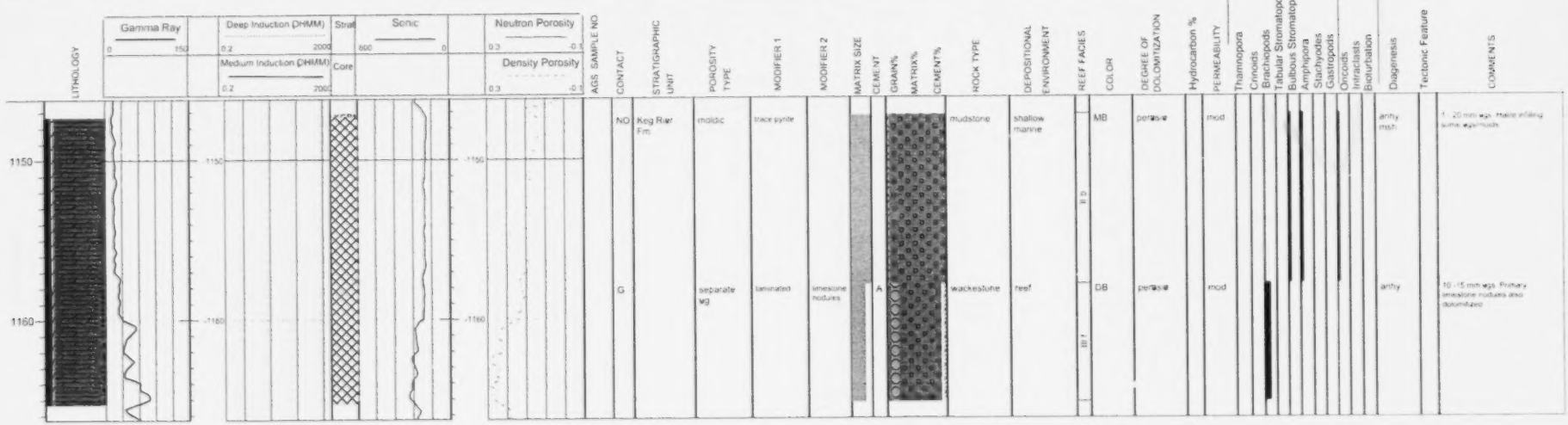
SITID: 126082
SRCID: 995041205000
UWI: 00/05-12-099-04W5-0
Well Name: Amoco Owl Creek

KB Elevation: 513.2
Total Depth: 1236
Spud Date: 1/30/1985
Rig Rlse Date: 2/20/1985

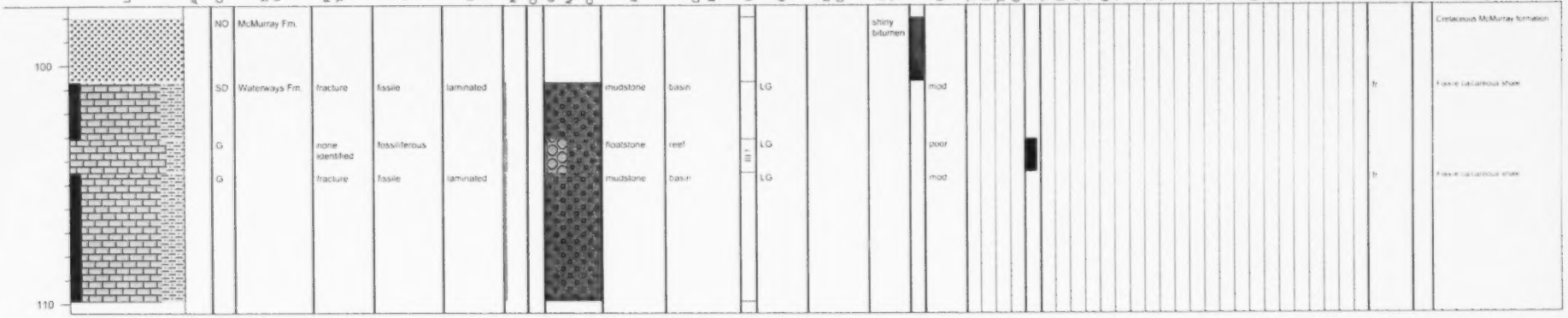
Coordinate System: UTM NAD 27
Easting: 648662.39
Northing: 6383815.40

Latitude (83): 57.574181
Longitude (83): -114.514153

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SitID:	276801	**KB Elevation:**	329.2	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.35728
SRCID:	0964102805AA0	**Total Depth:**	109.7	**Easting:**	465609.99	**Longitude(83):**	-111.5725
UWI:	AA/05-28-096-10W4/0	**Spud Date:**	1/21/2000	**Northing:**	6357078.13		
Well Name:	Koch UTS Ft-Hills	**Rig Rlse Date:**	1/22/2000				



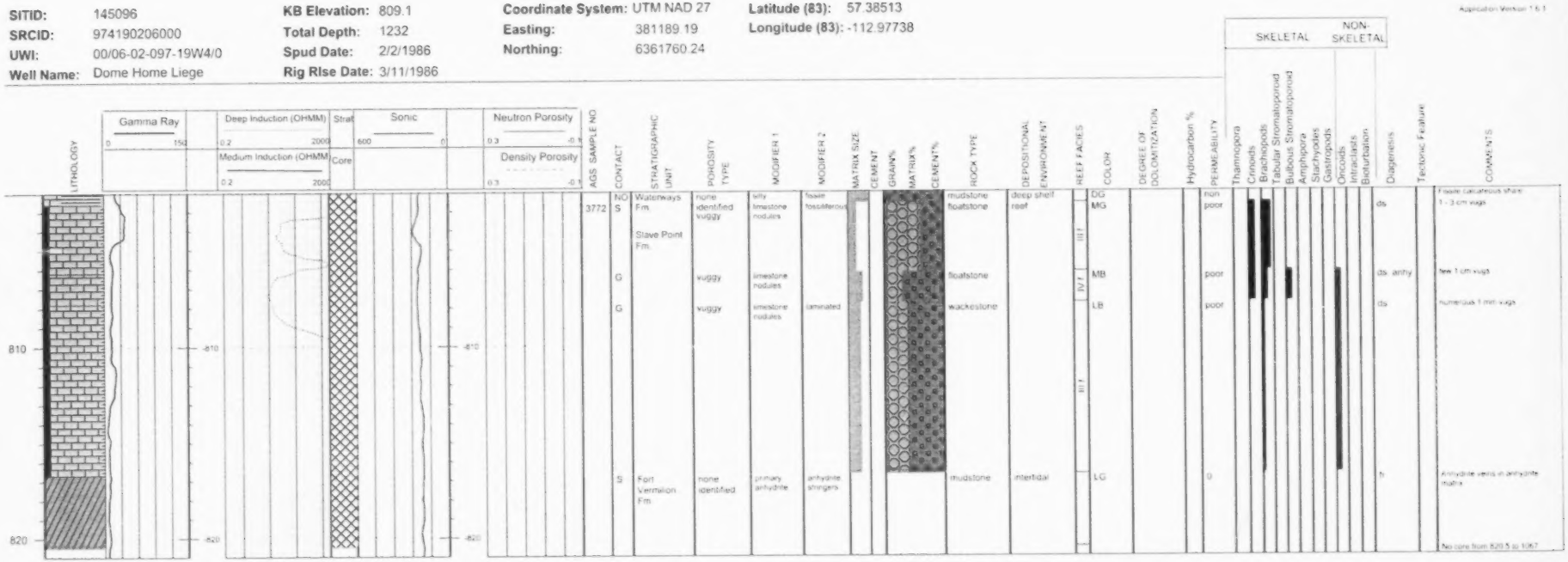
SITID: 145096
SRCID: 974190206000
UWI: 00/06-02-097-19W4/0
Well Name: Dome Home Liege

KB Elevation: 809.1
Total Depth: 1232
Spud Date: 2/2/1986
Rig RIse Date: 3/11/1986

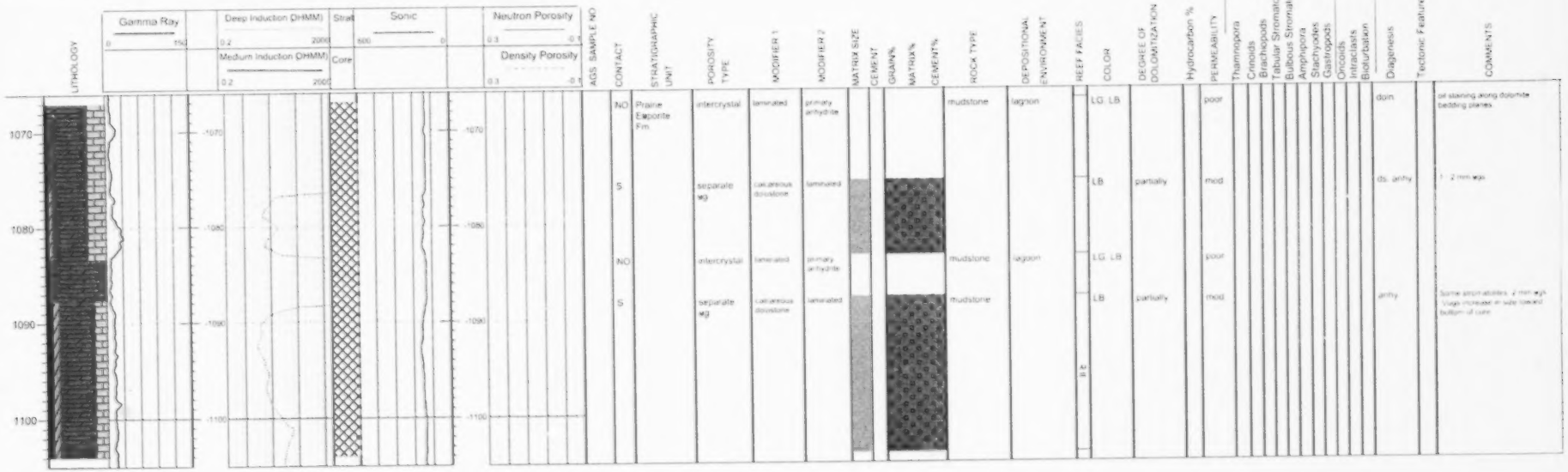
Coordinate System: UTM NAD 27
Easting: 381189.19
Northing: 6361760.24

Latitude (83): 57.38513
Longitude (83): -112.97738

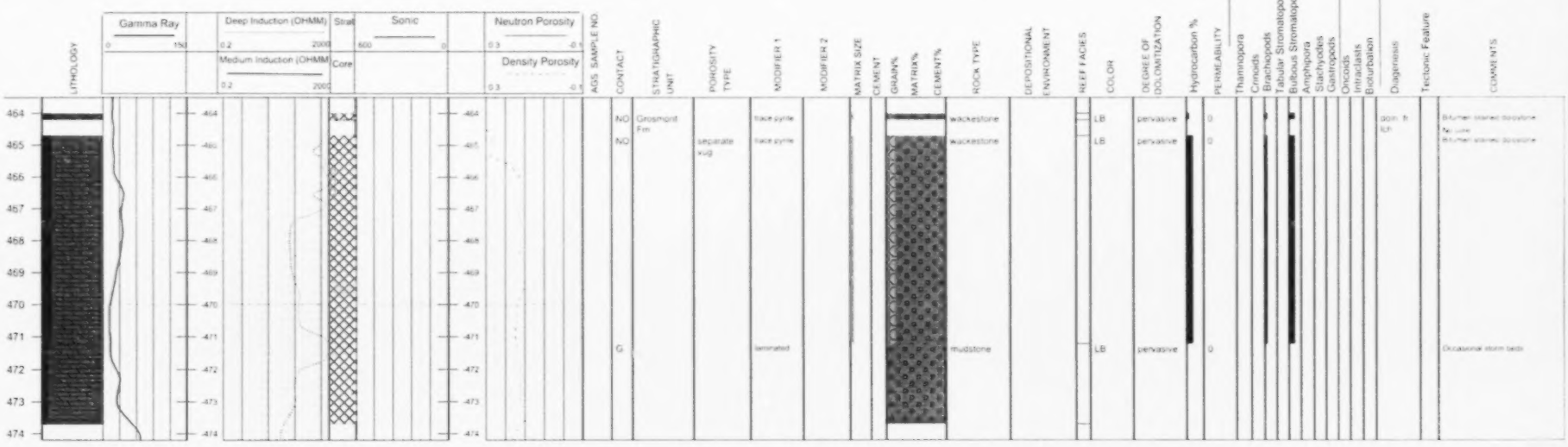
Application Version 1.6.1



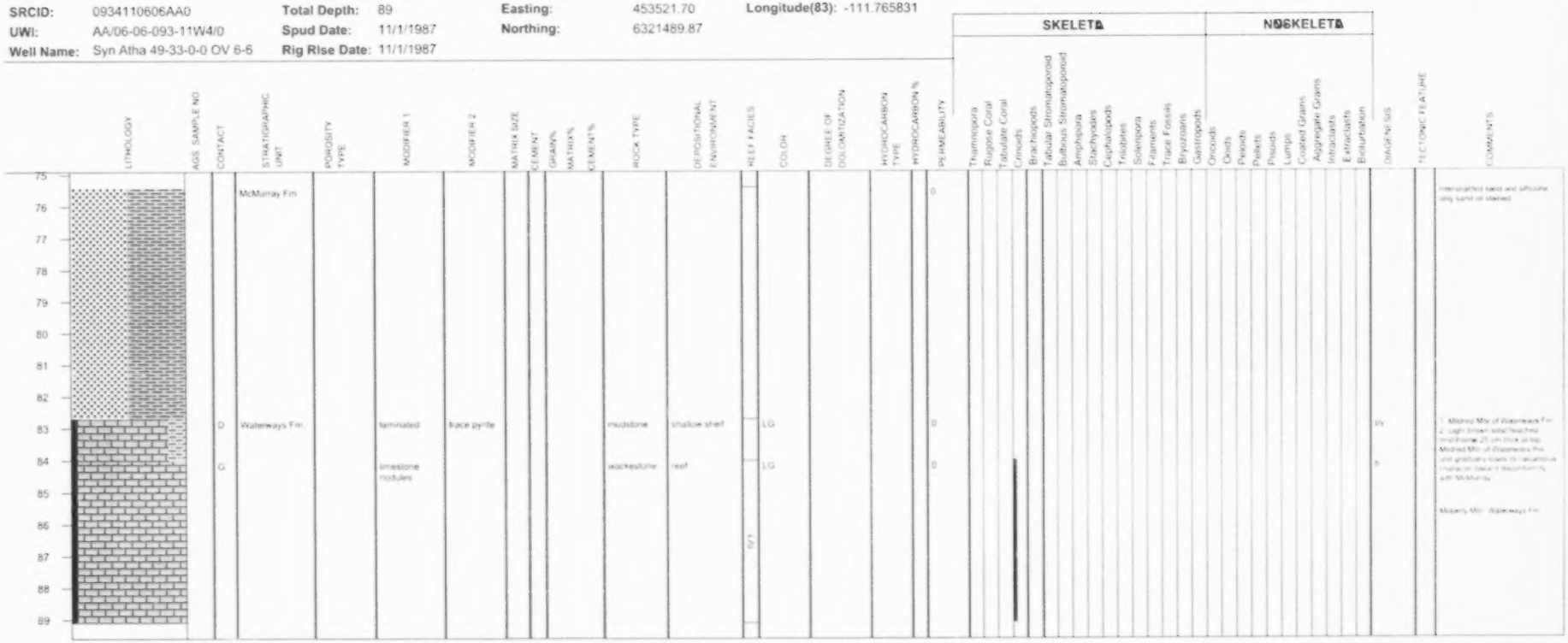
SITID:	145096	**KB Elevation:**	809.1	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.38513
SRCID:	974190206000	**Total Depth:**	1232	**Easting:**	381189.19	**Longitude (83):**	-112.97738
UWI:	00/06-02-097-19W4/0	**Spud Date:**	2/2/1986	**Northing:**	6361760.24		
Well Name:	Dome Home Liege	**Rig Rlse Date:**	3/11/1986				



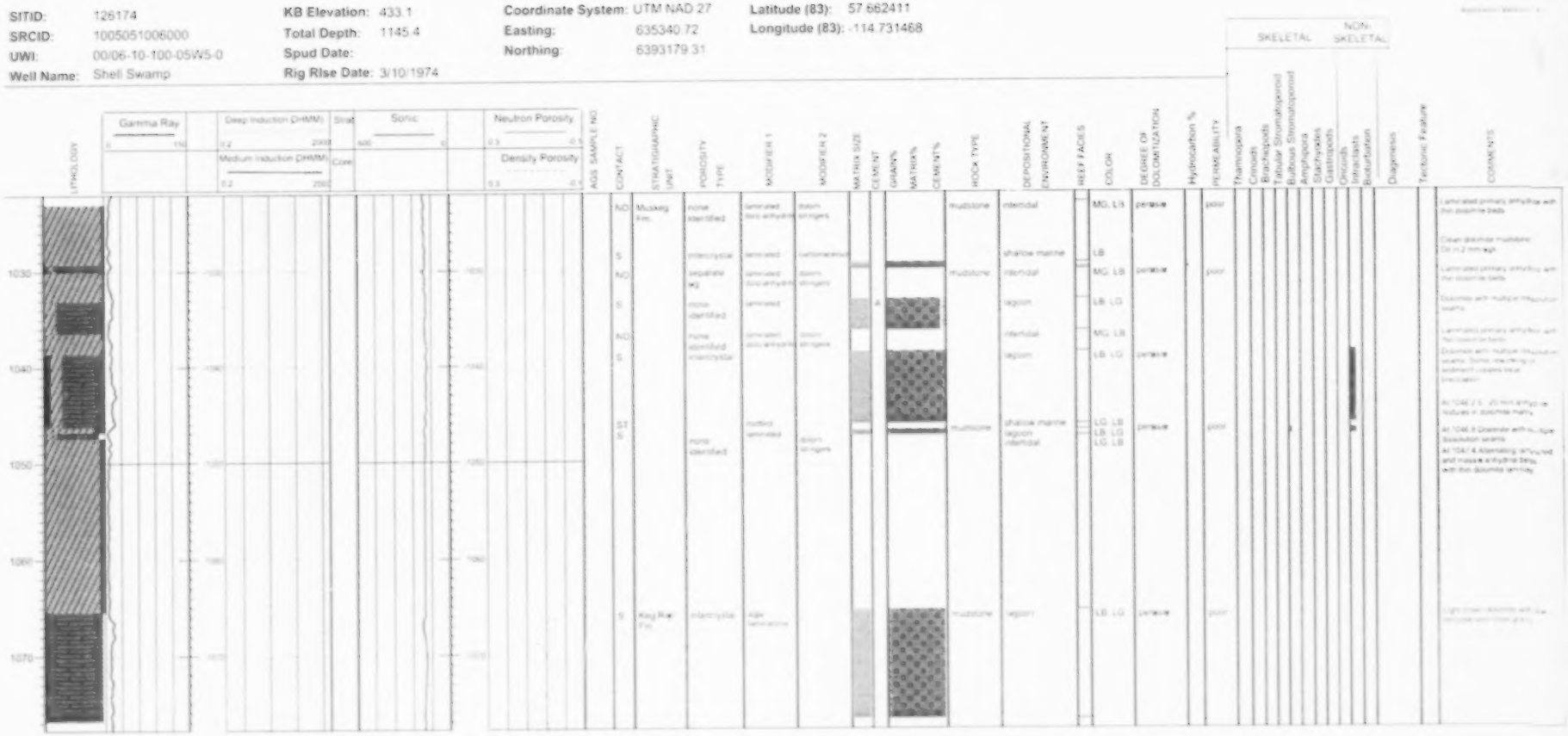
SITID:	125932	**KB Elevation:**	715.6	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.47263
SRCID:	984240506000	**Total Depth:**	565	**Easting:**	328016.54	**Longitude (83):**	-113.86795
UWI:	00/06-05-098-24W4/0	**Spud Date:**	2/6/1983	**Northing:**	6373417.61		
Well Name:	Canterra dan	**Rig RIse Date:**	2/12/1983				



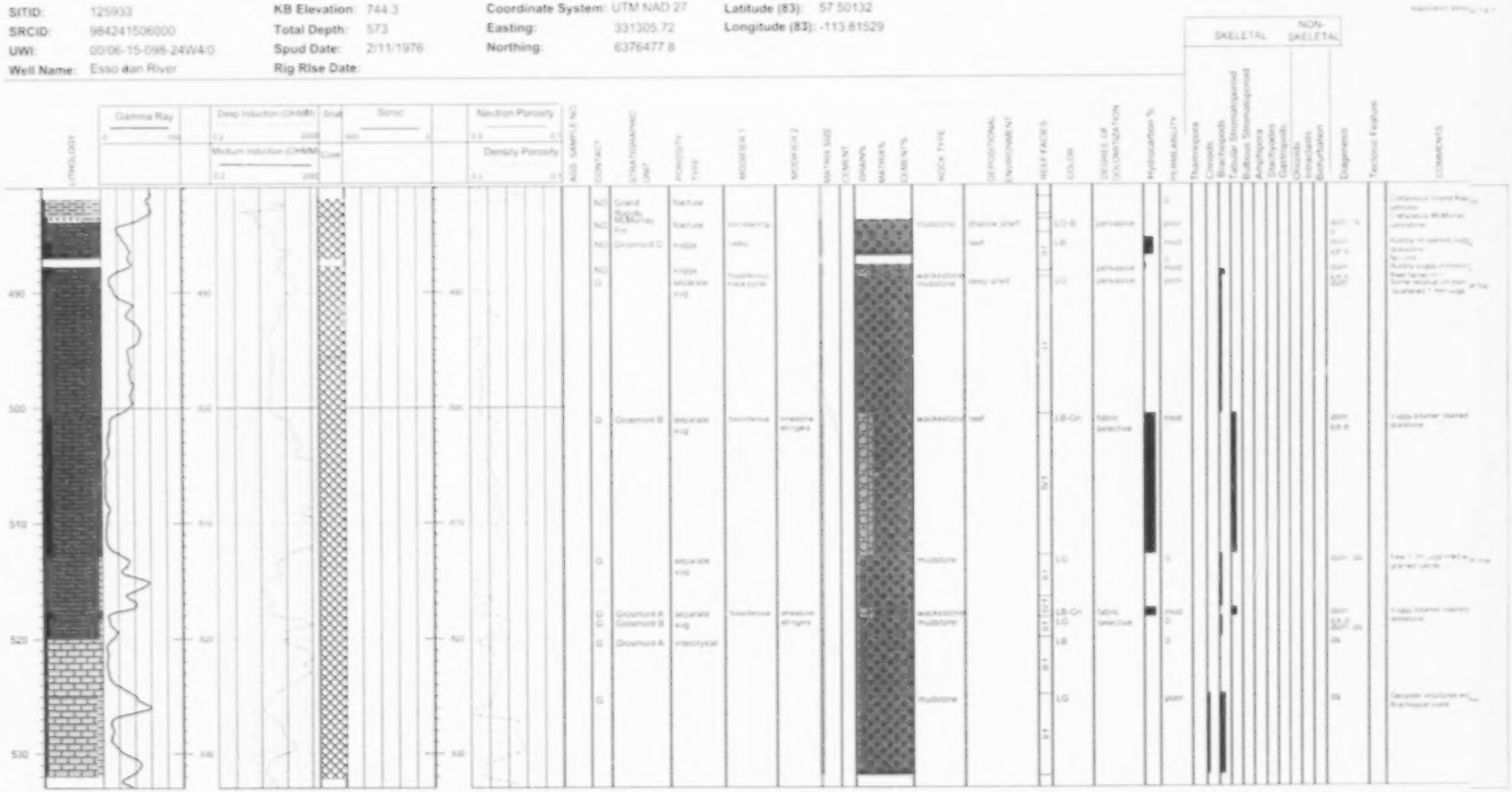
SitID:	144707	**KB Elevation:**	347.4	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.036434
SRCID:	0934110606AA0	**Total Depth:**	89	**Easting:**	453521.70	**Longitude(83):**	-111.765831
UWI:	AA/06-06-093-11W4/0	**Spud Date:**	11/1/1987	**Northing:**	6321489.87		
Well Name:	Syn Atha 49-33-0-0 OV 6-6	**Rig Rlse Date:**	11/1/1987				



SITID:	126174	**KB Elevation:**	433.1	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.662411
SRCID:	1005051006000	**Total Depth:**	1145.4	**Easting:**	635340.72	**Longitude (83):**	-114.731468
UWI:	00/06-10-100-05W5-0	**Spud Date:**		**Northing:**	6393179.31		
Well Name:	Shell Swamp	**Rig Rlse Date:**	3/10/1974				



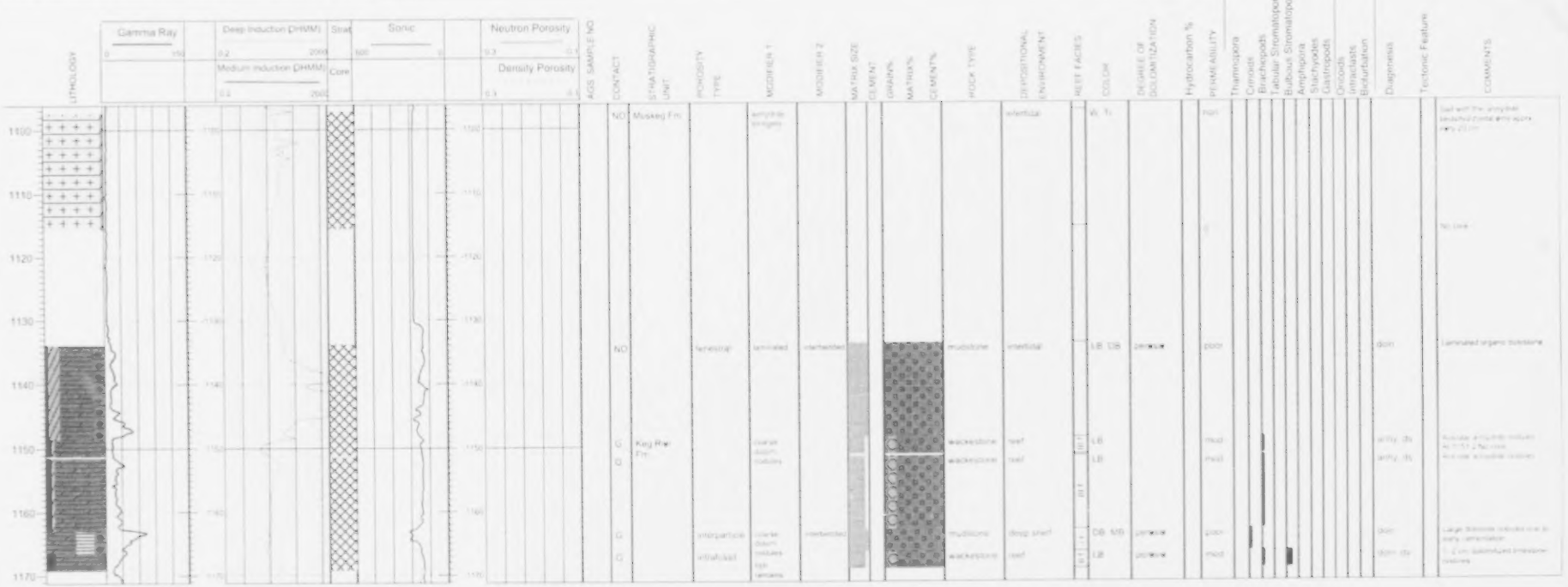
SITID:	125933	**KB Elevation:**	744.3	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.50132
SRCID:	984241506000	**Total Depth:**	573	**Easting:**	331305.72	**Longitude (83):**	-113.81529
UWI:	00/06-15-098-24W4/0	**Spud Date:**	2/11/1976	**Northing:**	6376477.8		
Well Name:	Esso Kan River	**Rig Rlse Date:**					



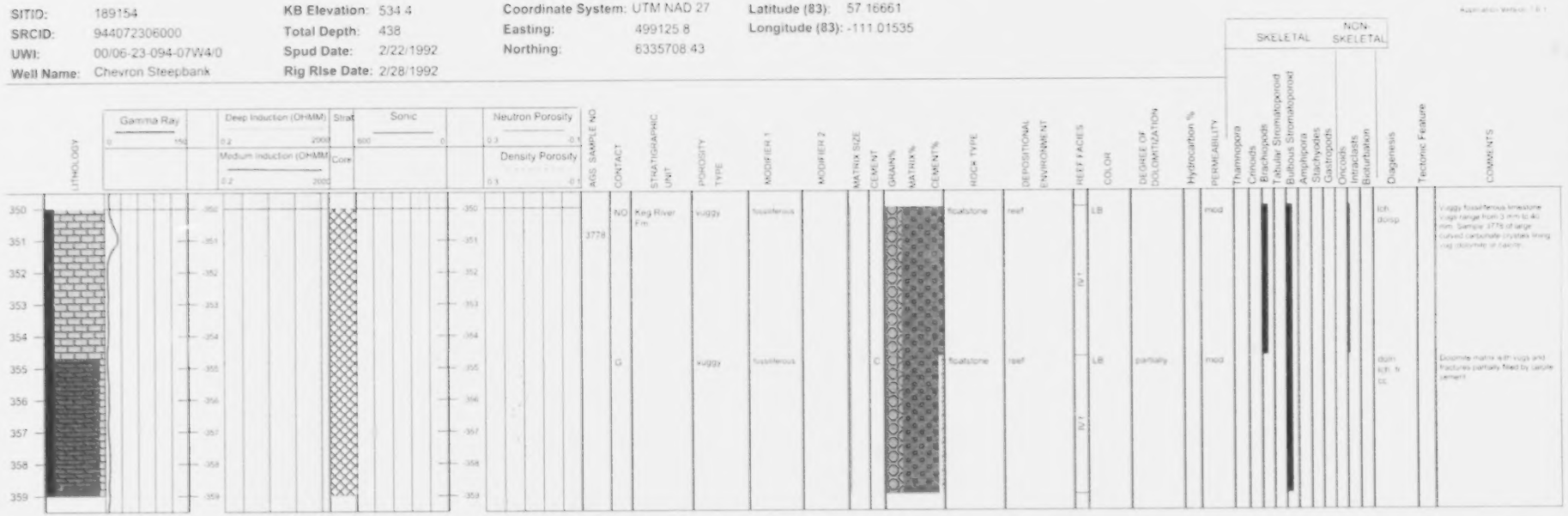
SitID:	117804	KB Elevation:	397.3	Coordinate System:	UTM NAD 27	Latitude (83):	56.731777
SRCID:	0894102006AA0	Total Depth:	166.1	Easting:	465526.34	Longitude(83):	-111.563423
UWI:	AA/06-20-089-10W4/0	Spud Date:	2/26/1984	Northing:	6287458.12		
Well Name:	Esso BSL 40-1 Oslo OV 6-20-89-10	Rig Rlse Date:	2/28/1984				


SKELETAL
NONSKELETAL
LITHOLOGY
AGS SAMPLE NO
CONTACT
STRATIGRAPHIC UNIT
POROSITY TYPE
MODIFIER 1
MODIFIER 2
MATRIX SIZE
CEMENT
GRAIN%
MATRIX%
CEMENT%
ROCK TYPE
DEPOSITIONAL ENVIRONMENT
REEF FACIES
COLOR
DEGREE OF DOLOMITIZATION
HYDROCARBON TYPE
HYDROCARBON %
PERMEABILITY
Thamnopora
Rugose Coral
Tabulate Coral
Crinoids
Brachiopods
Tabular Stromatoporoid
Bulbous Stromatoporoid
Amphipora
Stachyodes
Cephalopods
Trilobites
Solenpora
Filaments
Trace Fossils
Bryozoans
Gastropods
Oncoids
Ooids
Peloids
Pellets
Fisoids
Lumps
Coated Grains
Aggregate Grains
Intraclasts
Extraclasts
Bioturbation
DAGE N330
TECTONIC FEATURE
COMMENTS
150
155
160
165
McMurray Fm
Wabiskaw Fm
limestone nodules
laminated
trace pyrite
petroleum staining
trace pyrite
wackestone
mudstone
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SHALE
SHALE
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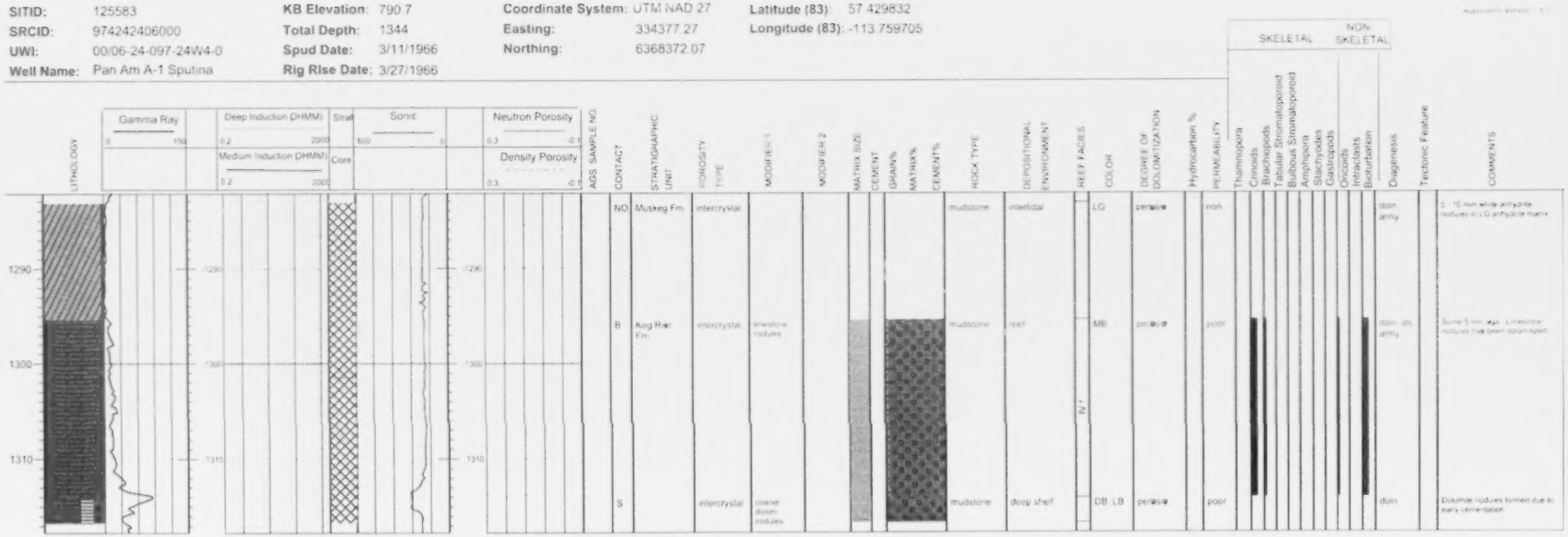
SITID:	125939	KB Elevation:	595	Coordinate System:	UTM NAD 27	Latitude (83):	57.516891
SRCID:	985012206000	Total Depth:	1195	Easting:	675382.26	Longitude (83):	-114.071808
UWI:	00/06-22-098-01W5-0	Spud Date:	2/10/1967	Northing:	6378496.43		
Well Name:	Pan Am A-1Mikkwa River	Rig Rlse Date:	3/8/1967				



SITID:	189154	**KB Elevation:**	534.4	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.16661
SRCID:	944072306000	**Total Depth:**	438	**Easting:**	499125.8	**Longitude (83):**	-111.01535
UWI:	00/06-23-094-07W4/0	**Spud Date:**	2/22/1992	**Northing:**	6335708.43		
Well Name:	Chevron Steepbank	**Rig Rlse Date:**	2/28/1992				

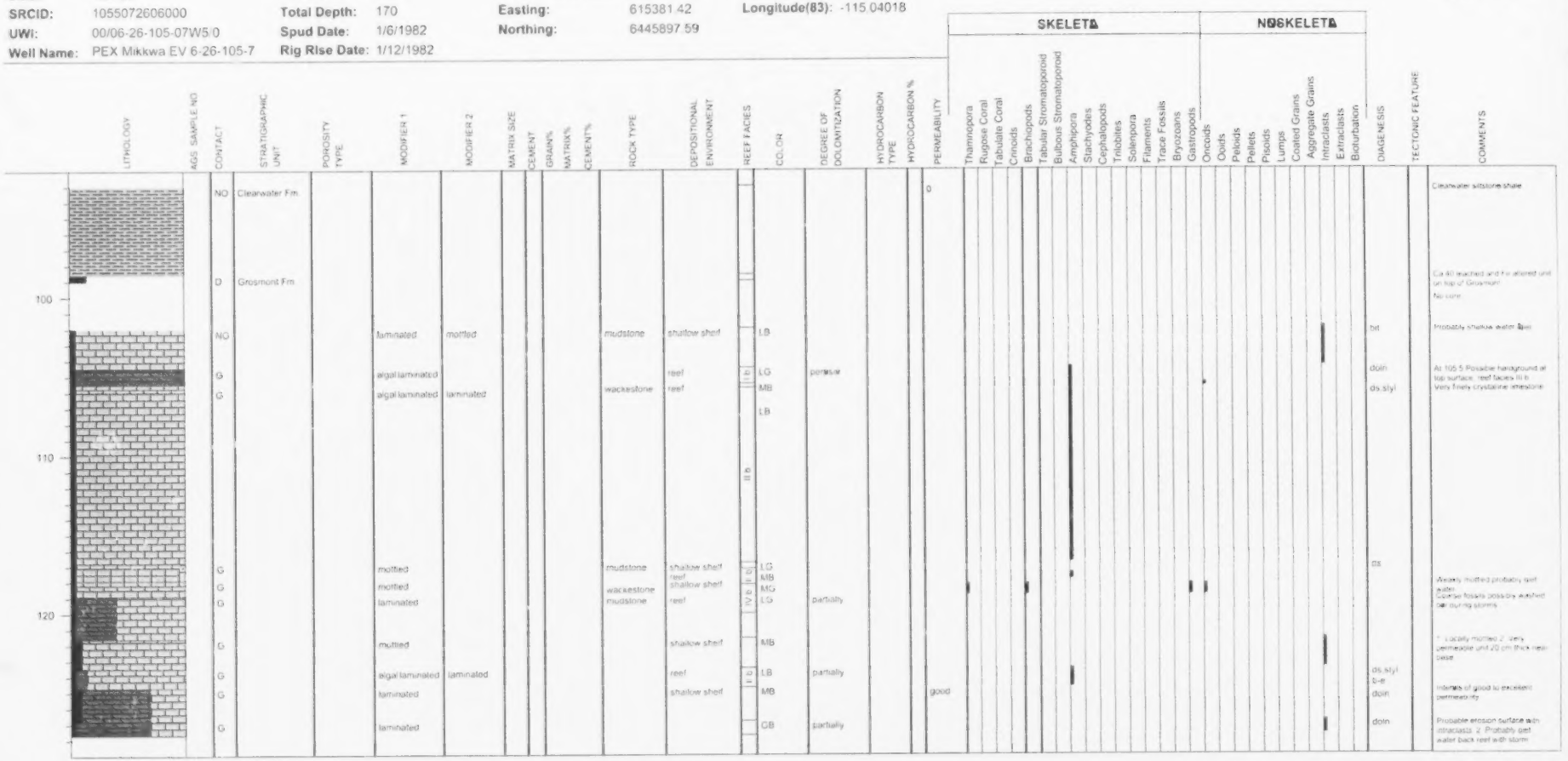


SITID:	125583	**KB Elevation:**	790.7	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.429832
SRCID:	974242406000	**Total Depth:**	1344	**Easting:**	334377.27	**Longitude (83):**	-113.759705
UWI:	00/06-24-097-24W4-0	**Spud Date:**	3/11/1966	**Northing:**	6368372.07		
Well Name:	Pan Am A-1 Sputina	**Rig Rlse Date:**	3/27/1966				

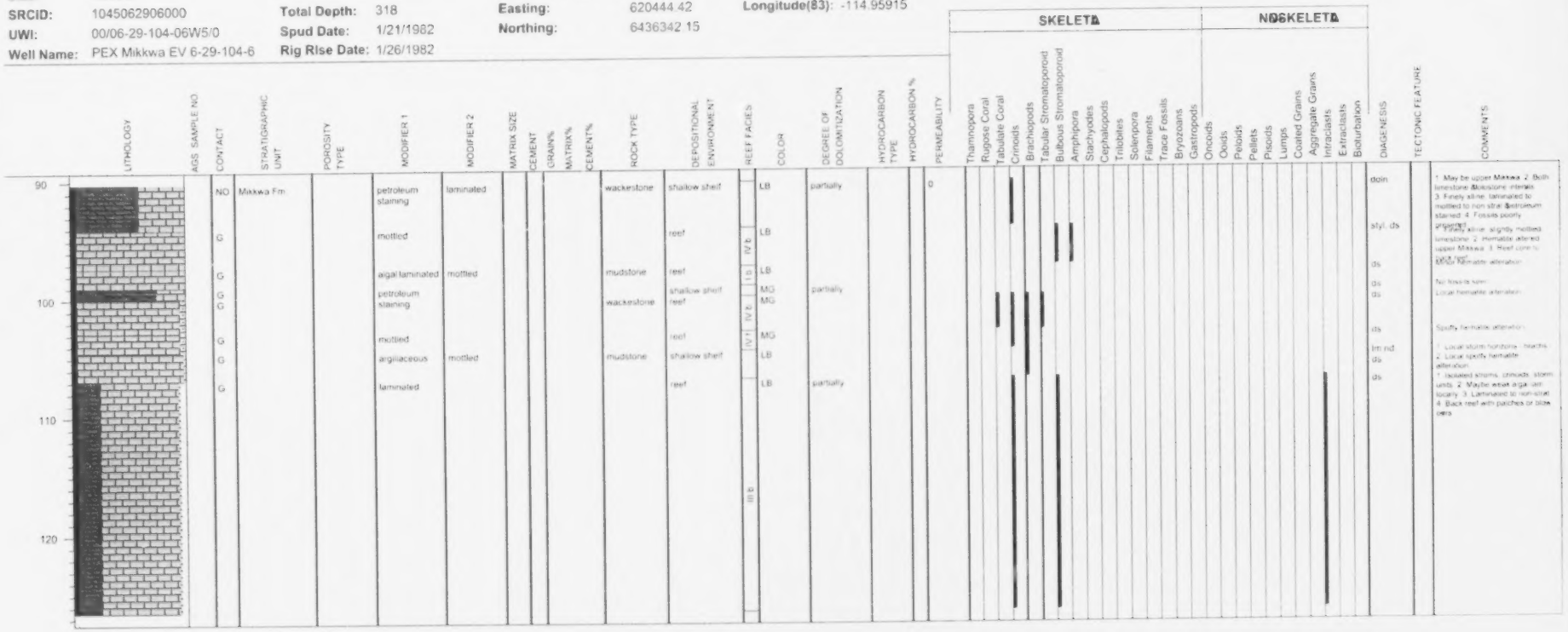


SitID:	126799	**KB Elevation:**	307.3	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.14121
SRCID:	1055072606000	**Total Depth:**	170	**Easting:**	615381.42	**Longitude(83):**	-115.04018
UWI:	00/06-26-105-07W5/0	**Spud Date:**	1/6/1982	**Northing:**	6445897.59		
Well Name:	PEX Mikkwa EV 6-26-105-7	**Rig Rlse Date:**	1/12/1982				

Application version: 1.6.1

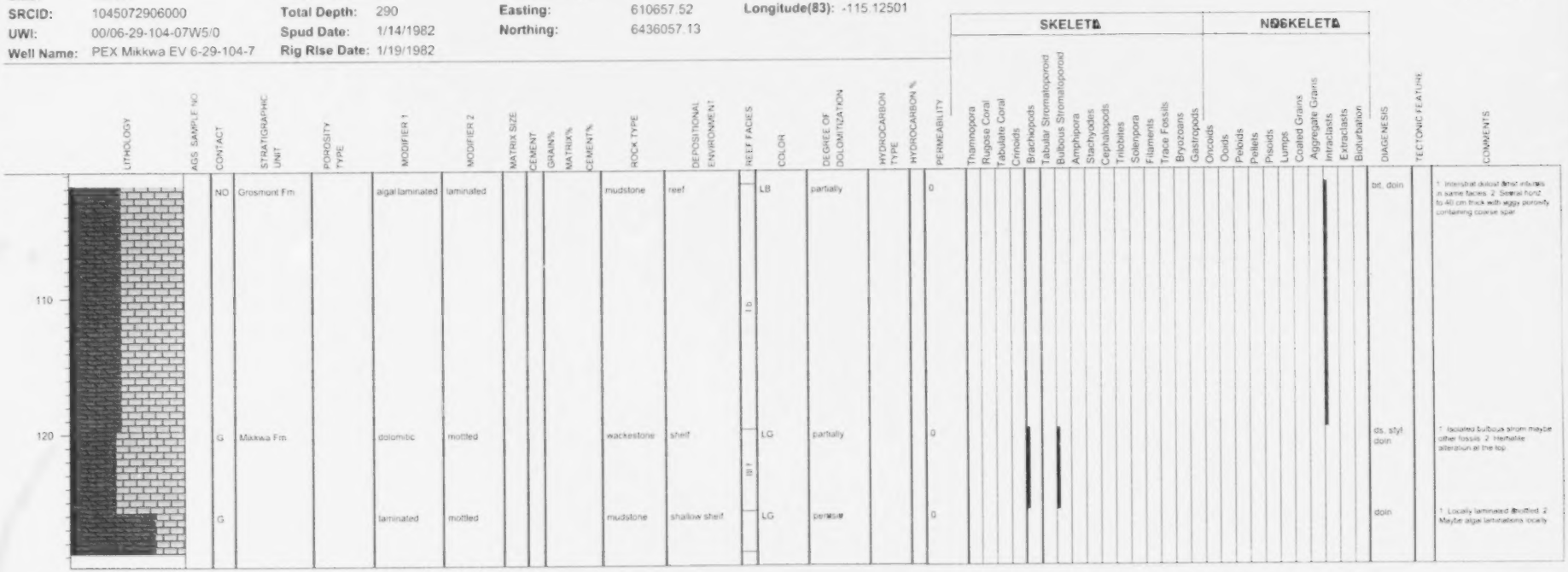


SitID:	126629	**KB Elevation:**	313 9	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58 05409
SRCID:	1045062906000	**Total Depth:**	318	**Easting:**	620444 42	**Longitude(83):**	-114 95915
UWI:	00/06-29-104-06W5/0	**Spud Date:**	1/21/1982	**Northing:**	6436342 15		
Well Name:	PEX Mikkwa EV 6-29-104-6	**Rig Rlse Date:**	1/26/1982				



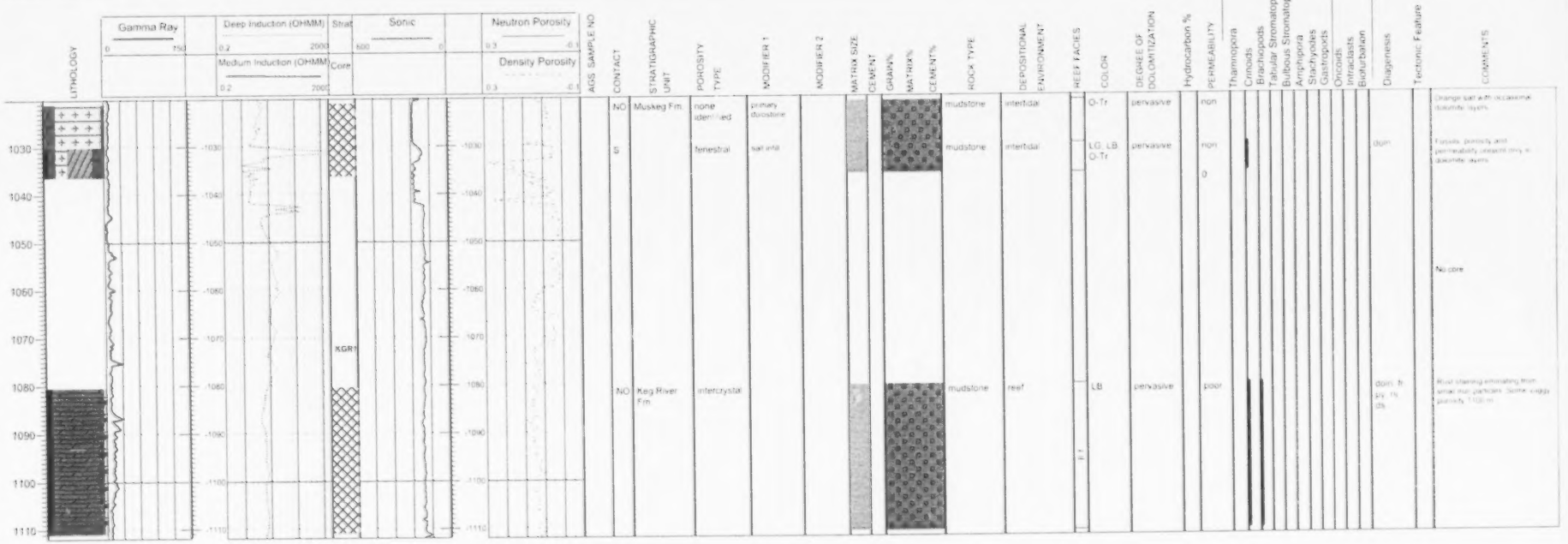
SitID:	126630	**KB Elevation:**	316.4	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.05408
SRCID:	1045072906000	**Total Depth:**	290	**Easting:**	610657.52	**Longitude(83):**	-115.12501
UWI:	00/06-29-104-07W5/0	**Spud Date:**	1/14/1982	**Northing:**	6436057.13		
Well Name:	PEX Mikkwa EV 6-29-104-7	**Rig Rise Date:**	1/19/1982				

Application Version 7.6.1



SITID:	125928	**KB Elevation:**	667.2	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.544628
SRCID:	984223106000	**Total Depth:**	1213	**Easting:**	346065.67	**Longitude (83):**	-113.573021
UWI:	00/06-31-098-22W4-0	**Spud Date:**	2/9/1968	**Northing:**	6380706.77		
Well Name:	Pan Am B-1 dan	**Rig RIse Date:**	2/27/1968				

Application Version 1.6.1



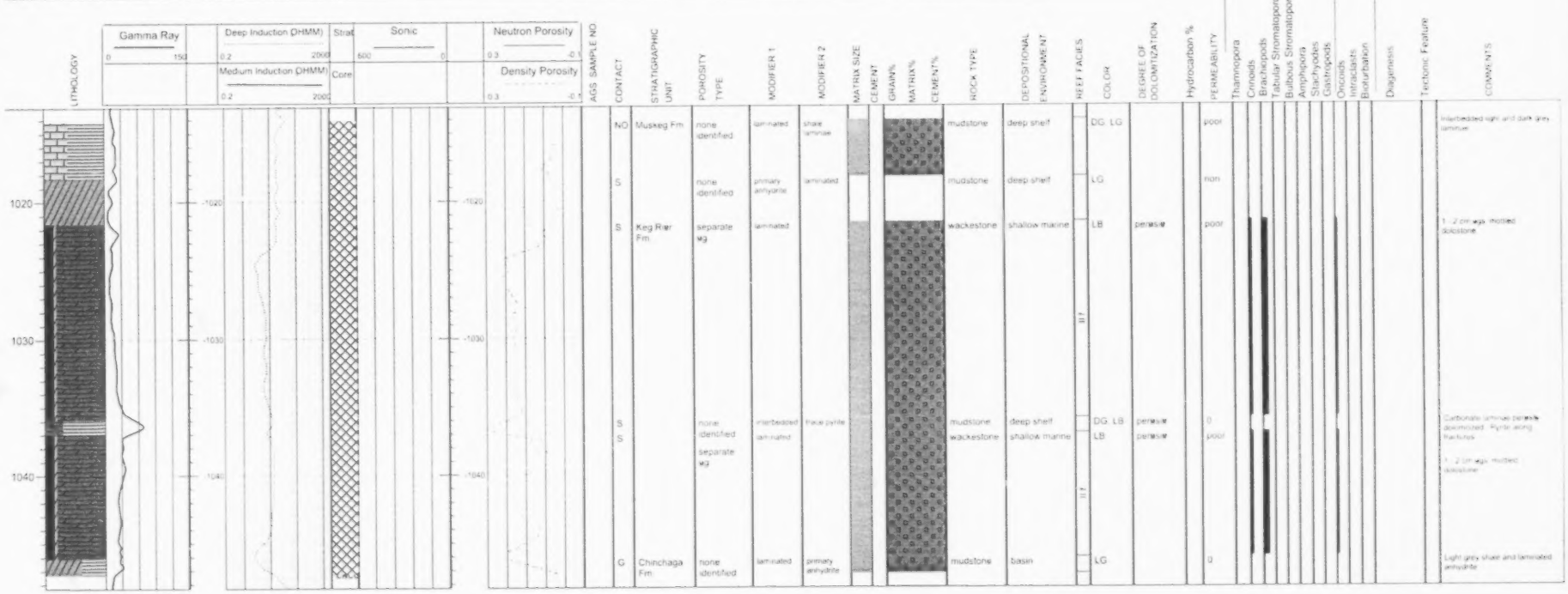
SITID: 126254
SRCID: 1015053106000
UWI: 00/06-31-101-05W5-0
Well Name: Signal 72 Mikkwa

KB Elevation: 371.6
Total Depth: 1119
Spud Date: 3/1/1973
Rig Rlse Date: 3/18/1973

Coordinate System: UTM NAD 27
Easting: 629977.22
Northing: 6409124.87

Latitude (83): 57.807114
Longitude (83): -114.812668

Application Version 1.6.1

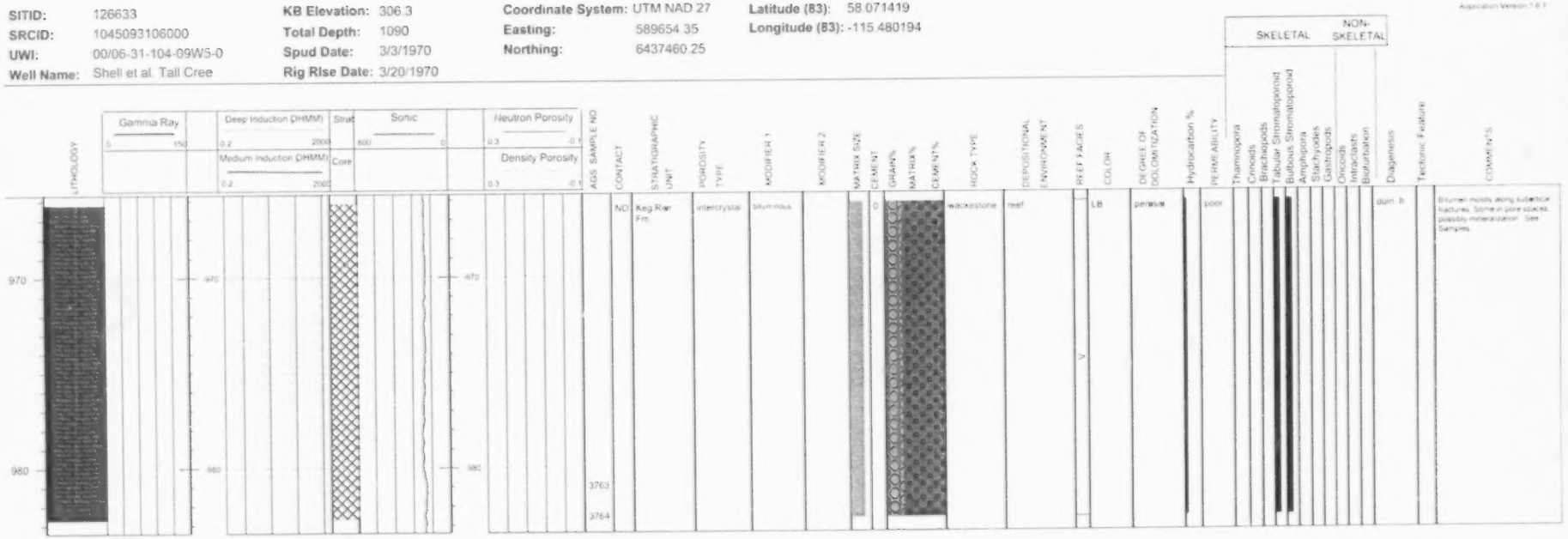


SITID: 126633
SRCID: 1045093106000
UWI: 00/06-31-104-09W5-0
Well Name: Shell et al. Tall Cree

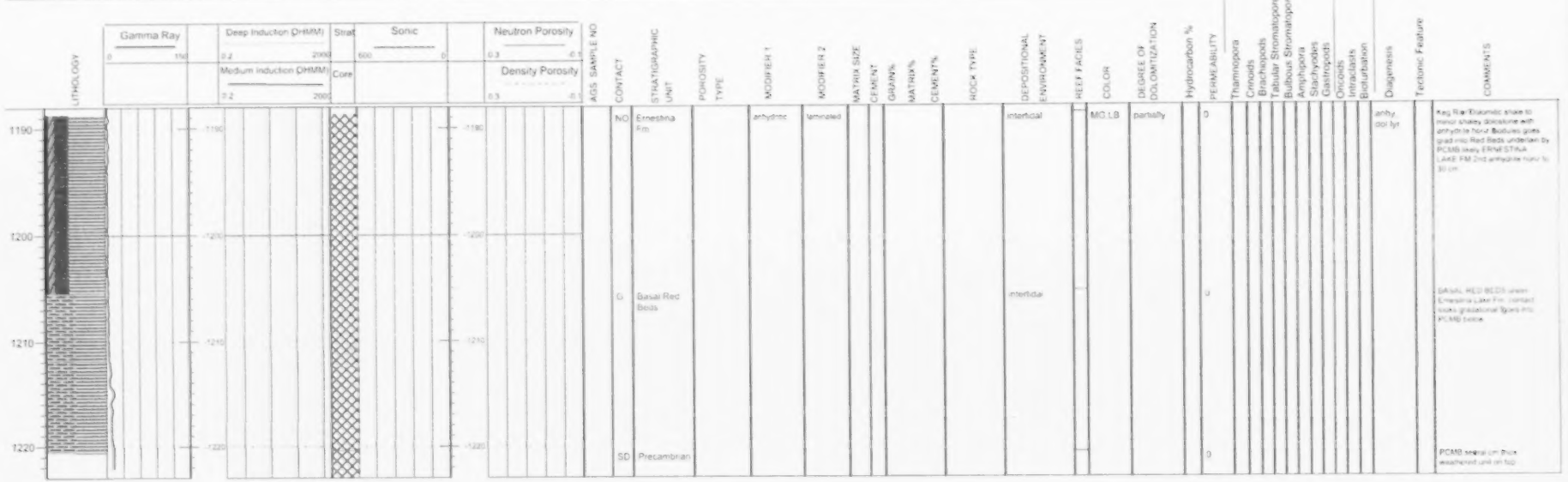
KB Elevation: 306.3
Total Depth: 1090
Spud Date: 3/3/1970
Rig Rlse Date: 3/20/1970

Coordinate System: UTM NAD 27
Easting: 589654.35
Northing: 6437460.25

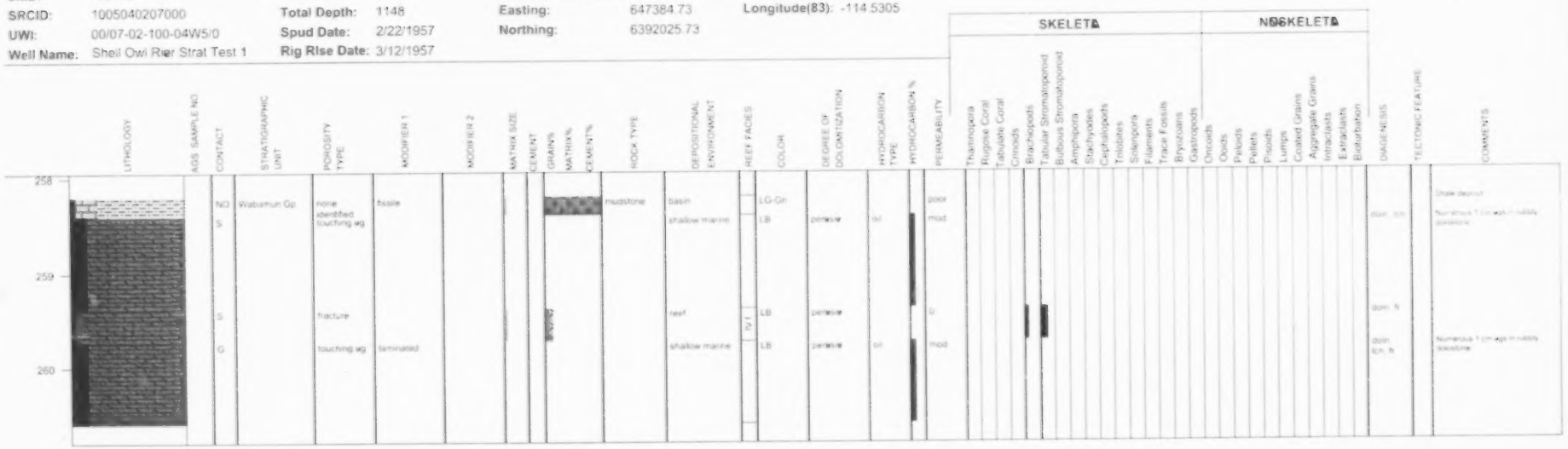
Latitude (83): 58.071419
Longitude (83): -115.480194



SITID:	126087	**KB Elevation:**	407.5	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.633923
SRCID:	995073306002	**Total Depth:**	1224	**Easting:**	614400.12	**Longitude (83):**	-115.08403
UWI:	00/06-33-099-07W5-2	**Spud Date:**	3/26/1965	**Northing:**	6389359.39		
Well Name:	Calstan Senex Creek 6-33-99-7	**Rig Rlse Date:**	4/12/1965				



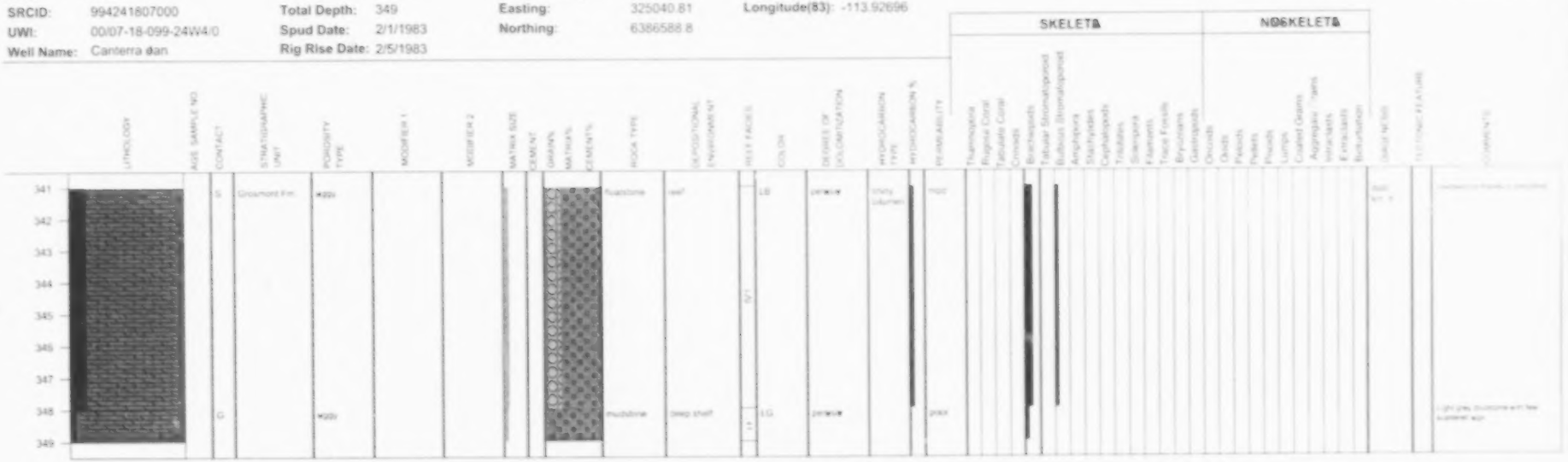
SitID:	126172	**KB Elevation:**	456	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.64828
SRCID:	1005040207000	**Total Depth:**	1148	**Easting:**	647384.73	**Longitude(83):**	-114.5305
UWI:	00/07-02-100-04W5/0	**Spud Date:**	2/22/1957	**Northing:**	6392025.73		
Well Name:	Shell Owl Rier Strat Test 1	**Rig Rlse Date:**	3/12/1957				



SitID:	179343	**KB Elevation:**	317.2	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.226227
SRCID:	0954091007AA0	**Total Depth:**	119.7	**Easting:**	477683.35	**Longitude(83):**	-111.369598
UWI:	AA/07-10-095-09W4/0	**Spud Date:**	4/2/1990	**Northing:**	6342417.41		
Well Name:	Esso 90-12 Oslo OV 7-10-95-9	**Rig Rise Date:**	4/2/1990				



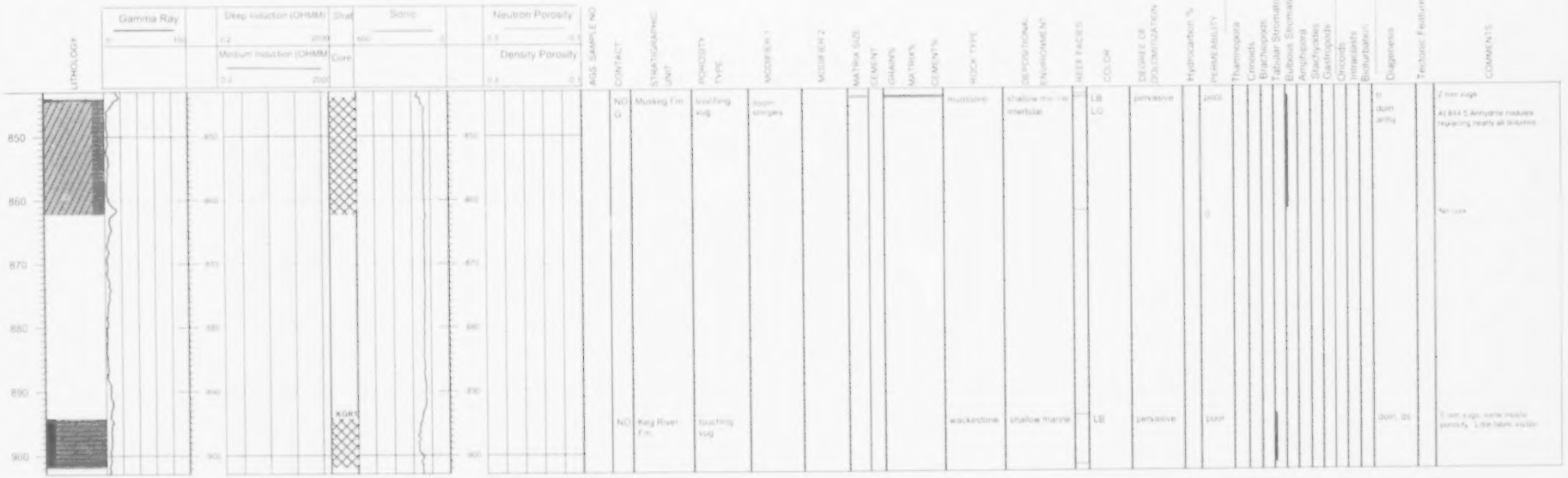
SitID:	126081	**KB Elevation:**	593.6	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.58965
SRCID:	994241807000	**Total Depth:**	349	**Easting:**	325040.81	**Longitude(83):**	-113.92696
UWI:	00/07-18-099-24W4/0	**Spud Date:**	2/1/1983	**Northing:**	6386588.8		
Well Name:	Canterra dan	**Rig Rlse Date:**	2/5/1983				



SitID:	155319	KB Elevation:	710.7	Coordinate System:	UTM NAD 27	Latitude (83):	57.51633
SRCID:	984241907000	Total Depth:	475	Easting:	327113.7	Longitude(83):	-113.88646
UWI:	00/07-19-098-24W4/0	Spud Date:	2/1/1988	Northing:	6378326.96		
Well Name:	MARATHON et al Harper 7-19-98-24	Rig Rlse Date:	2/6/1988				



SITID:	126627	**KB Elevation:**	316.7	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.039684
SRCID:	1045051907000	**Total Depth:**	1020	**Easting:**	629411.48	**Longitude (83):**	-114.80806
UWI:	00/07-19-104-05W5-0	**Spud Date:**	2/21/1969	**Northing:**	6435018.32		
Well Name:	Chevron Pan Am Harper	**Rig Rlse Date:**	3/14/1969				

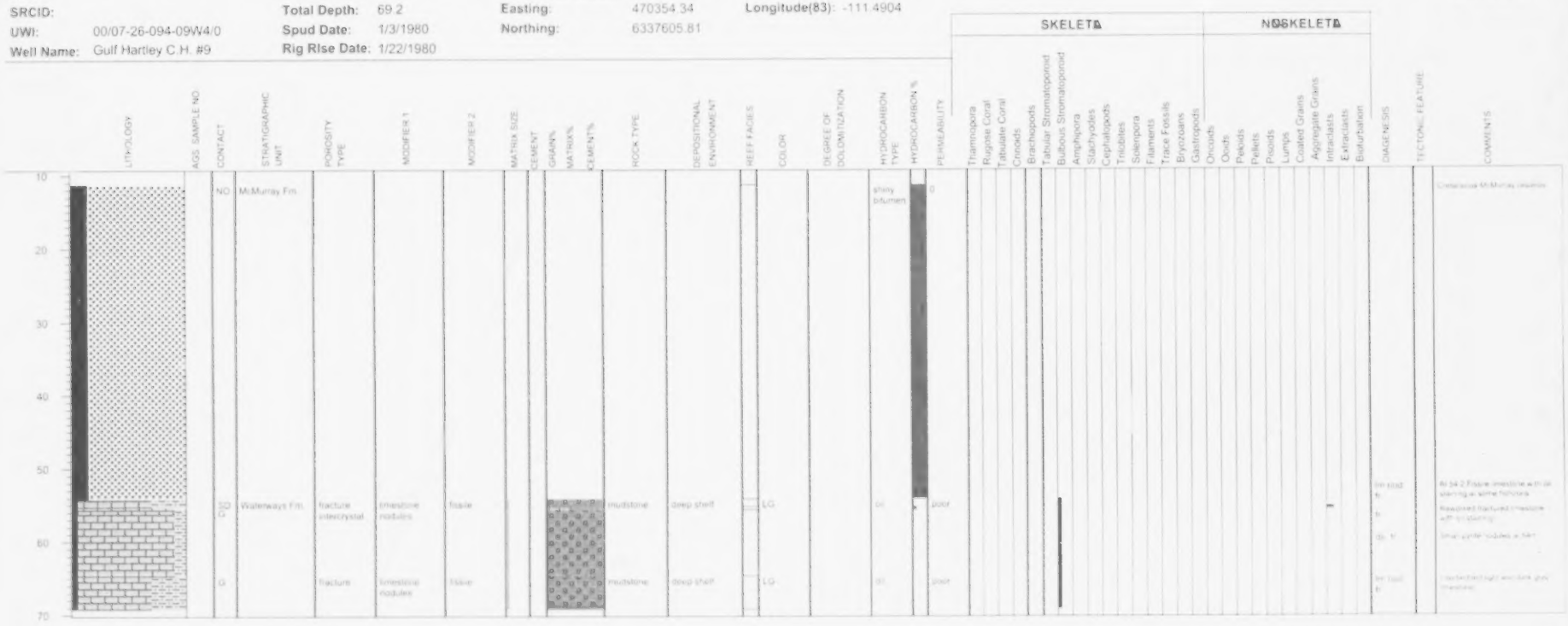


SitID:
SRCID:
UWI: 00/07-26-094-09W4/0
Well Name: Gulf Hartley C.H. #9

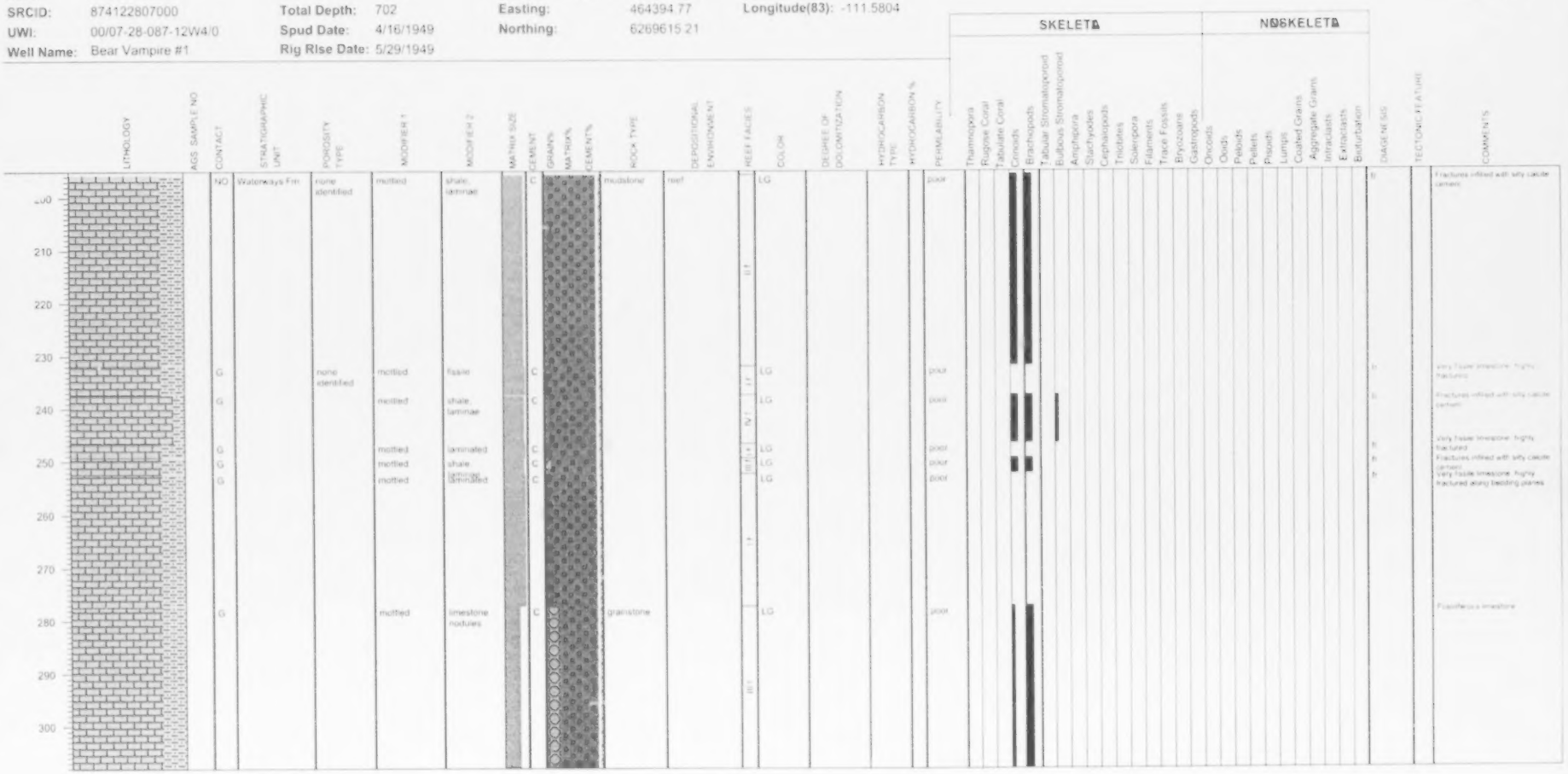
KB Elevation: 308.4
Total Depth: 69.2
Spud Date: 1/3/1980
Rig Rlse Date: 1/22/1980

Coordinate System: UTM NAD 27
Easting: 470354.34
Northing: 6337605.81

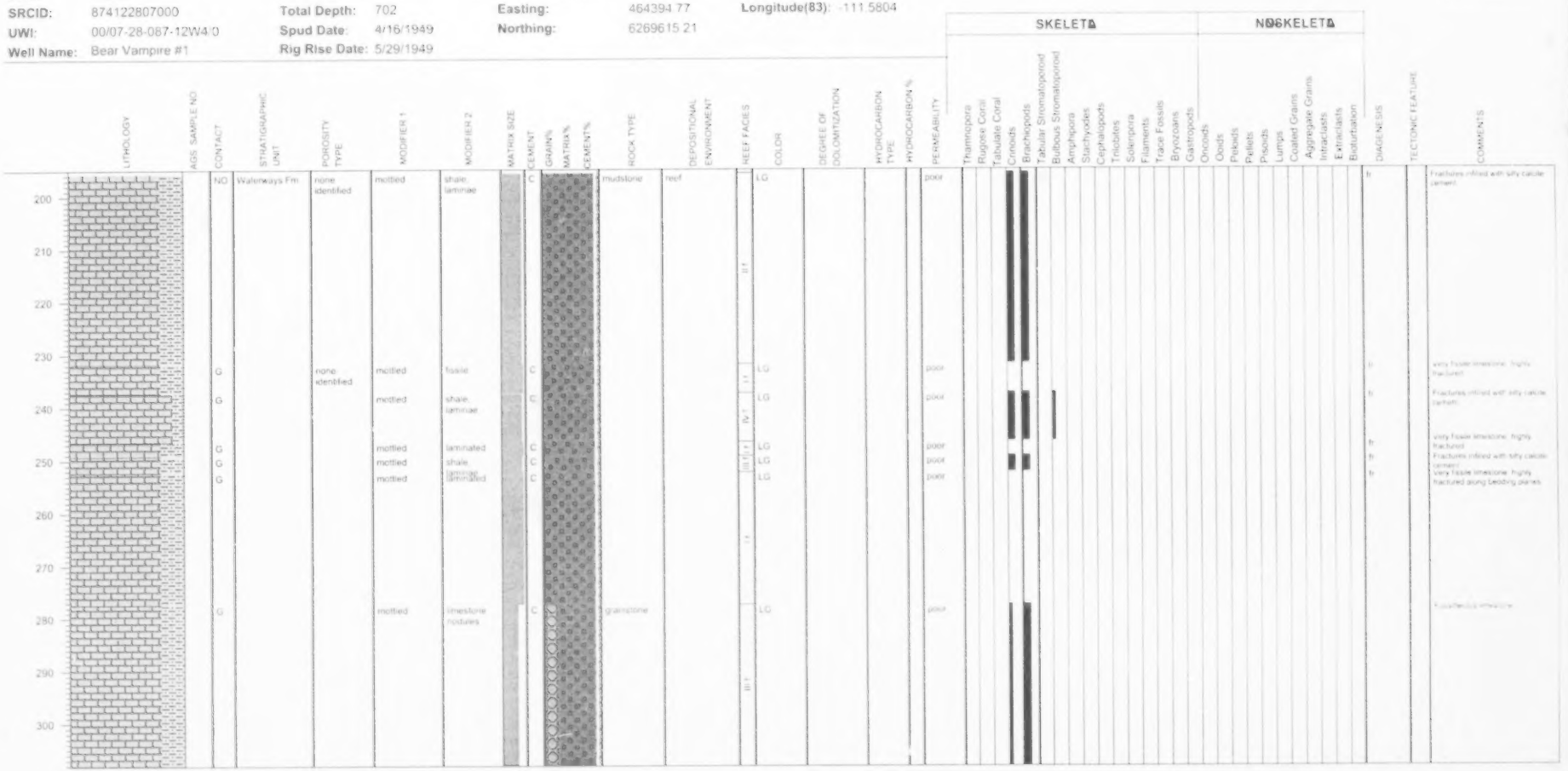
Latitude (83): 57.18259
Longitude(83): -111.4904



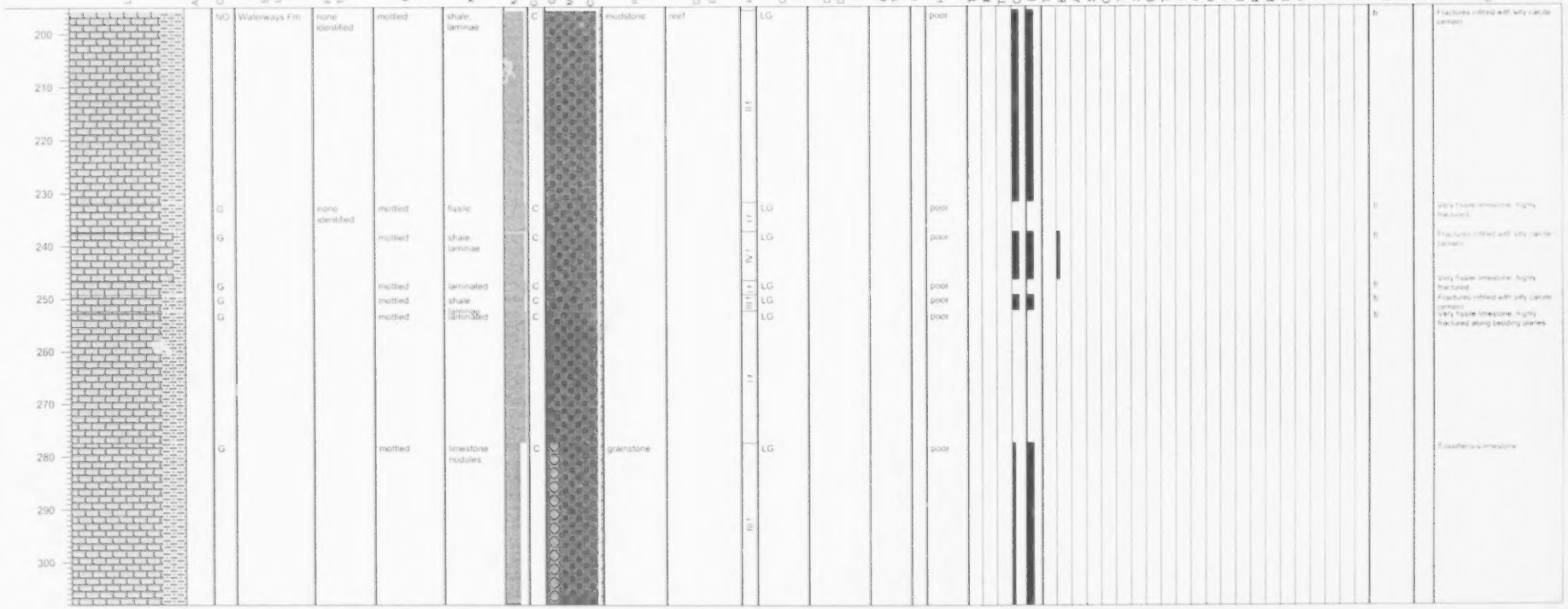
SitID:	116457	KB Elevation:	470.9	Coordinate System:	UTM NAD 27	Latitude (83):	56.5715
SRCID:	874122807000	Total Depth:	702	Easting:	464394.77	Longitude(83):	-111.5804
UWI:	00/07-28-087-12W4/0	Spud Date:	4/16/1949	Northing:	6269615.21		
Well Name:	Bear Vampire #1	Rig Rlse Date:	5/29/1949				



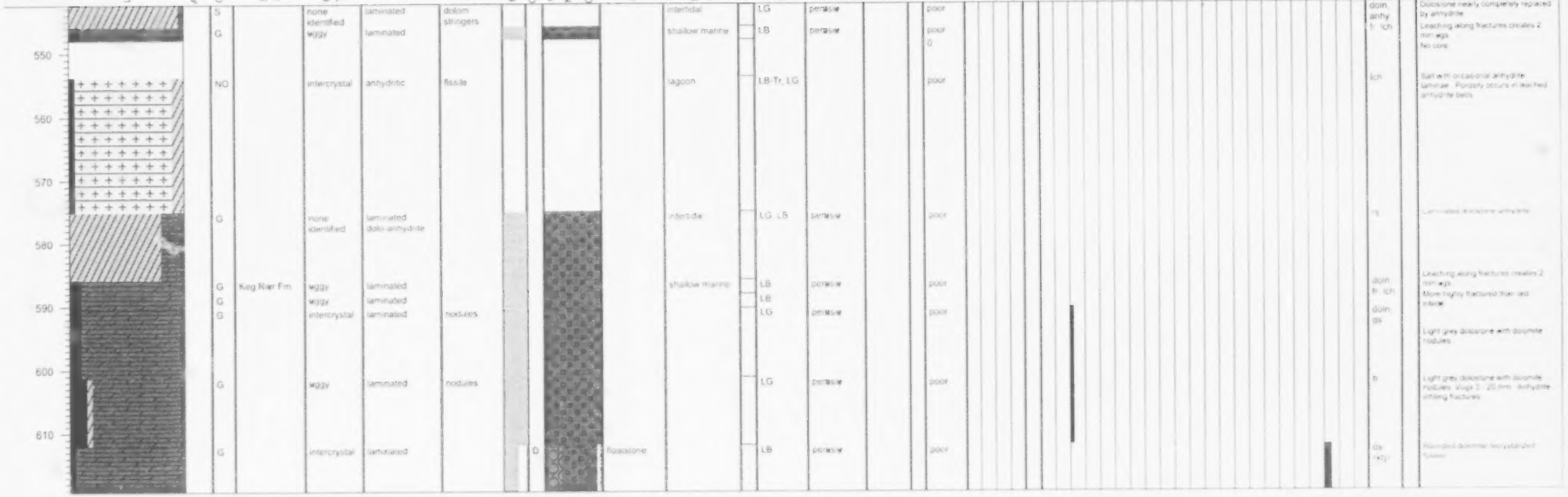
SitID:	116457	**KB Elevation:**	470.9	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	56.5715
SRCID:	874122807000	**Total Depth:**	702	**Easting:**	464394.77	**Longitude(83):**	-111.5804
UWI:	00/07-28-087-12W4/0	**Spud Date:**	4/16/1949	**Northing:**	6269615.21		
Well Name:	Bear Vampire #1	**Rig Rlse Date:**	5/29/1949				



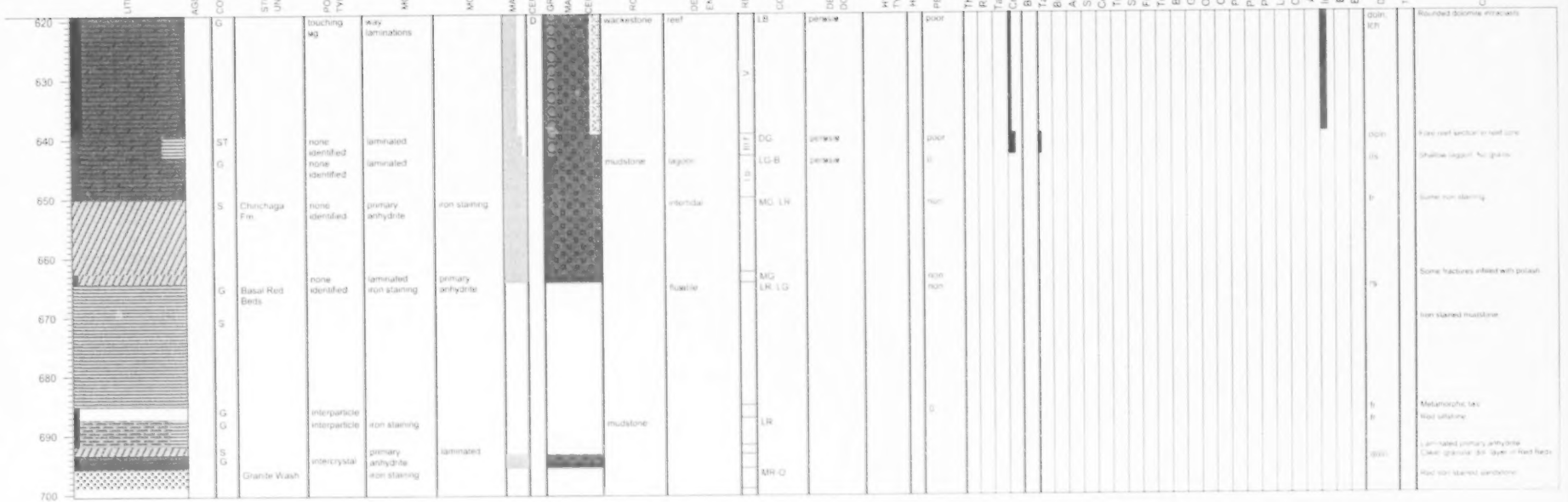
SitID:	116457	KB Elevation:	470.9	Coordinate System:	UTM NAD 27	Latitude (83):	56.5715
SRCID:	874122807000	Total Depth:	702	Easting:	464394.77	Longitude(83):	-111.5804
UWI:	00/07-28-087-12W4/0	Spud Date:	4/16/1949	Northing:	6269615.21		
Well Name:	Bear Vampire #1	Rig Rlse Date:	5/29/1949				



SitID:	116457	**KB Elevation:**	470.9	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	56.5715
SRCID:	874122807000	**Total Depth:**	702	**Easting:**	464394.77	**Longitude(83):**	-111.5804
UWI:	00/07-28-087-12W4/0	**Spud Date:**	4/16/1949	**Northing:**	6269615.21		
Well Name:	Bear Vampire #1	**Rig Rlse Date:**	5/29/1949				

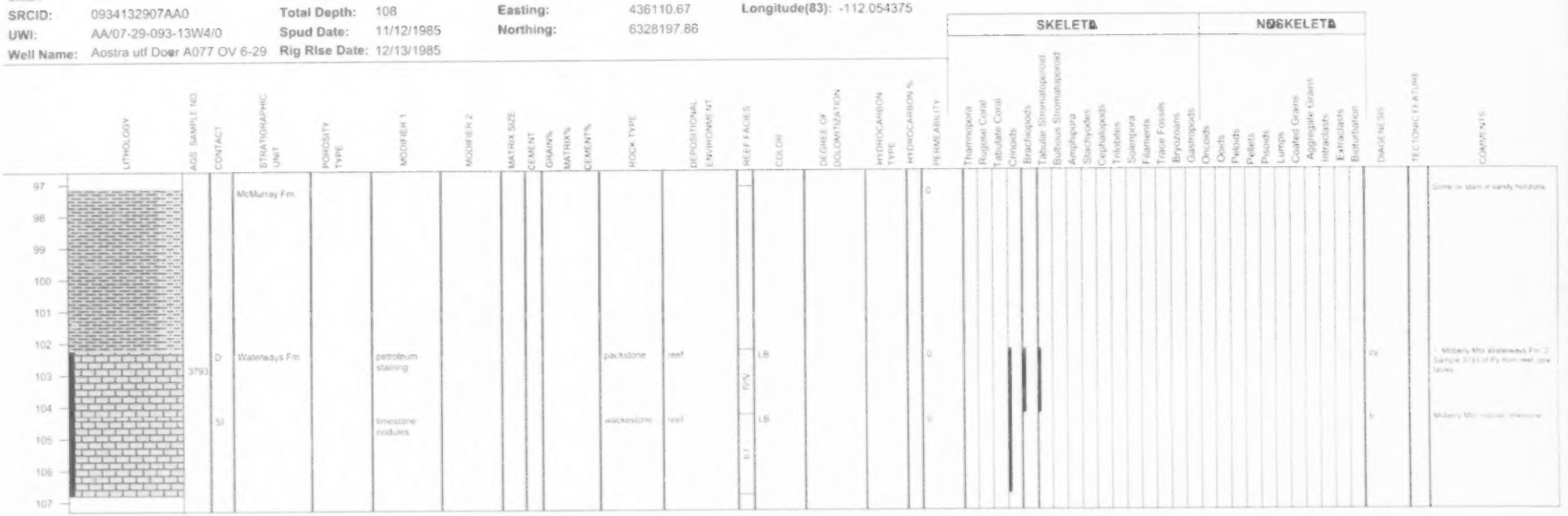


SitID:	116457	**KB Elevation:**	470.9	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	56.5715
SRCID:	874122807000	**Total Depth:**	702	**Easting:**	464394.77	**Longitude(83):**	-111.5804
UWI:	00/07-28-087-12W4/0	**Spud Date:**	4/16/1949	**Northing:**	6269615.21		
Well Name:	Bear Vampire #1	**Rig Rlse Date:**	5/29/1949				

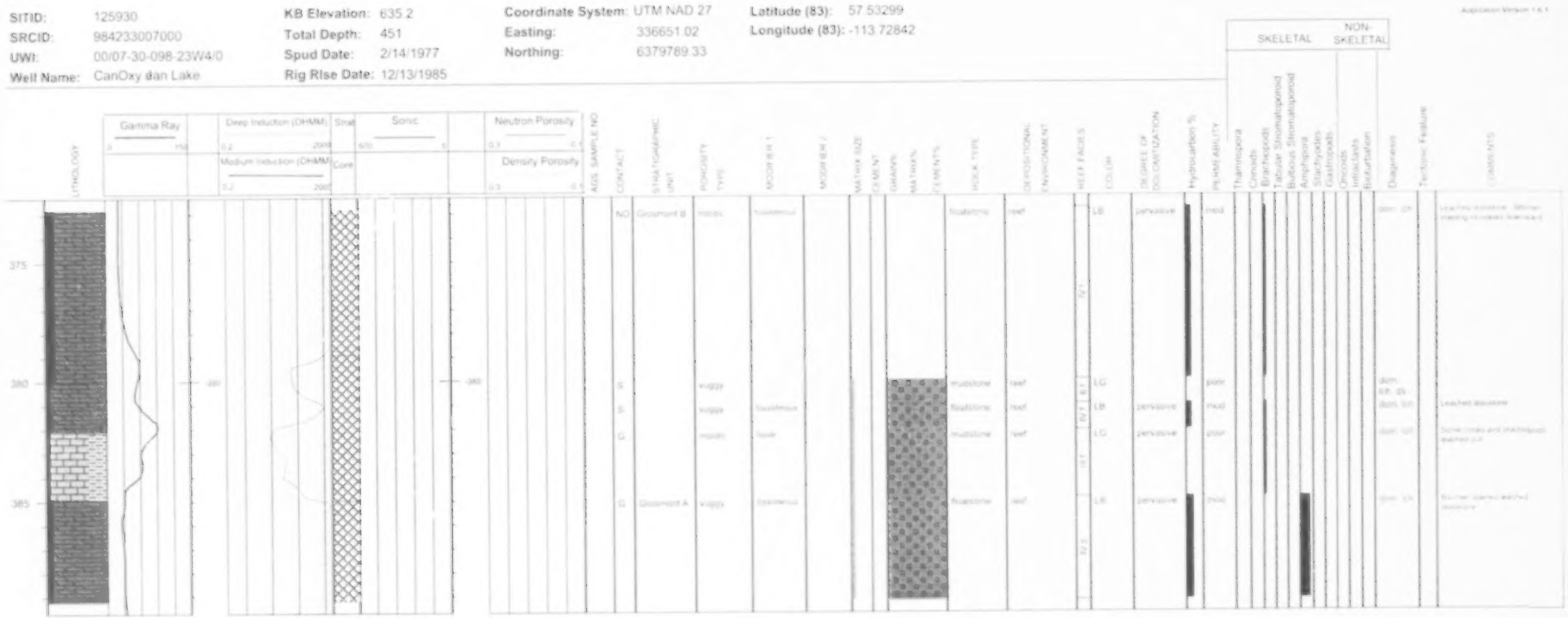


SitID:	144744	**KB Elevation:**	372.7	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.094601
SRCID:	0934132907AA0	**Total Depth:**	108	**Easting:**	436110.67	**Longitude(83):**	-112.054375
UWI:	AA/07-29-093-13W4/0	**Spud Date:**	11/12/1985	**Northing:**	6328197.86		
Well Name:	Aostra utf Doer A077 OV 6-29	**Rig Rlse Date:**	12/13/1985				

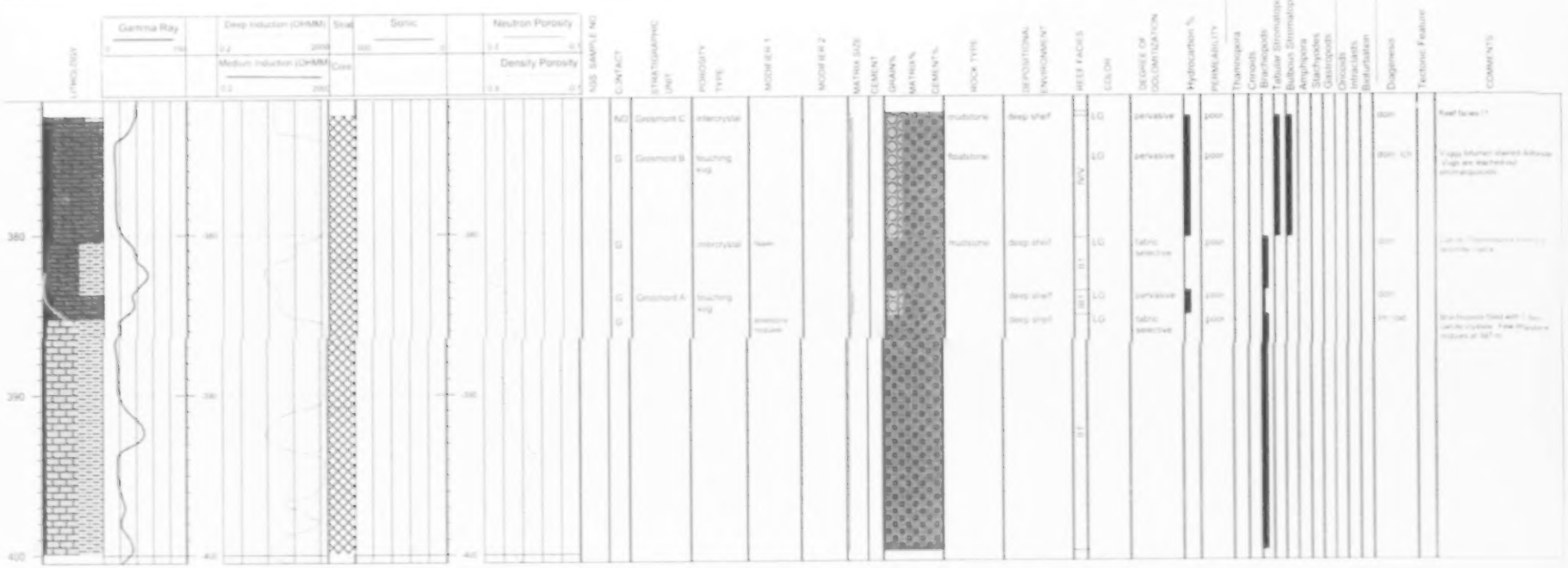
Application Version 1.6.1



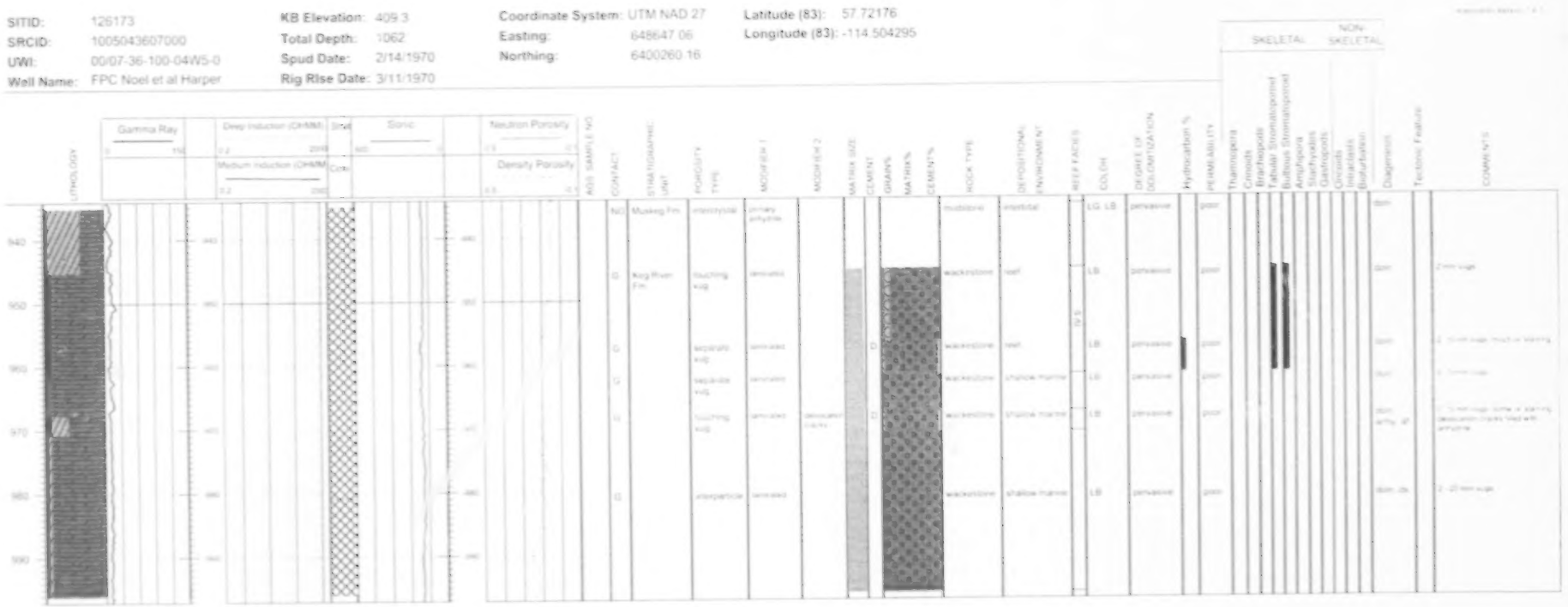
SITID:	125930	**KB Elevation:**	635.2	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.53299
SRCID:	984233007000	**Total Depth:**	451	**Easting:**	336651.02	**Longitude (83):**	-113.72842
UWI:	00/07-30-098-23W4/0	**Spud Date:**	2/14/1977	**Northing:**	6379789.33		
Well Name:	CanOxy dan Lake	**Rig Rlse Date:**	12/13/1985				



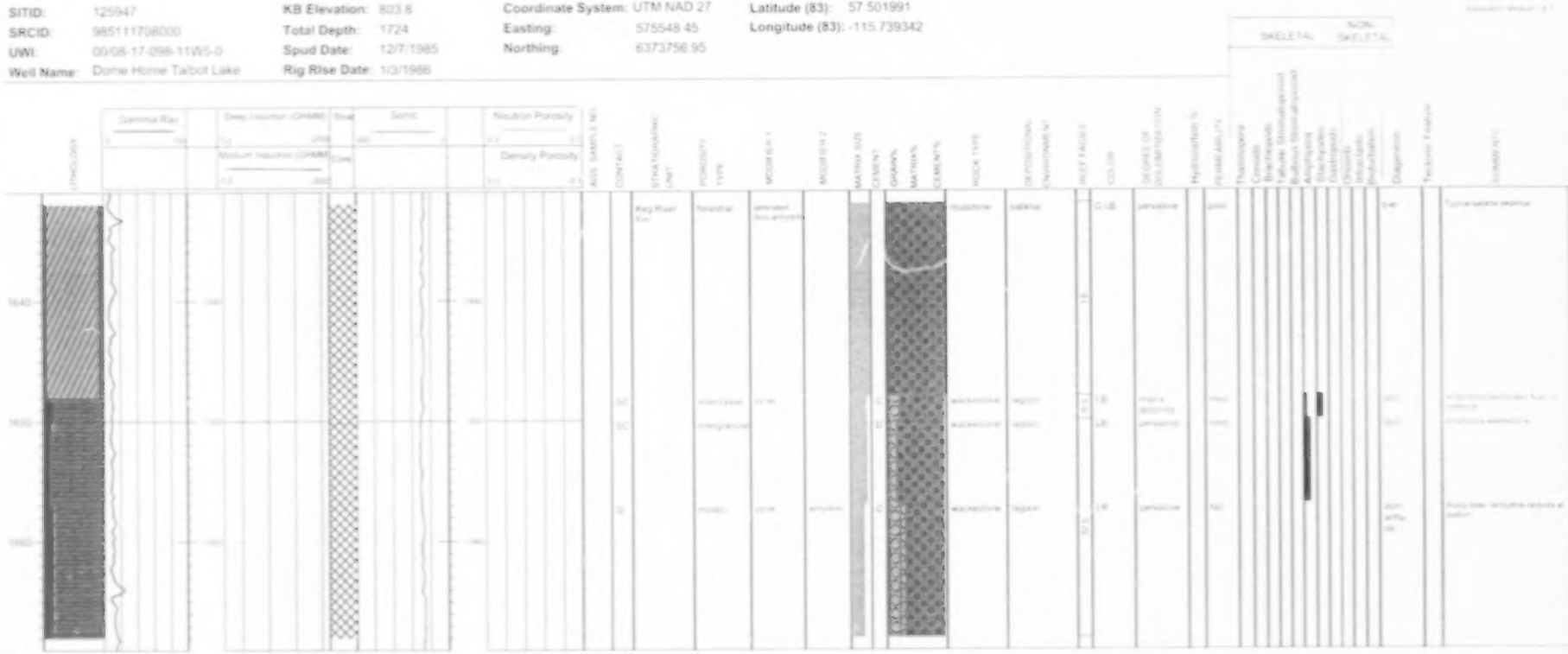
SITID:	125935	**KB Elevation:**	623.6	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.54516
SRCID:	984243407000	**Total Depth:**	457	**Easting:**	332092.62	**Longitude (83):**	-113.80552
UWI:	00/07-34-098-24W4/0	**Spud Date:**	2/21/1977	**Northing:**	6381331.65		
Well Name:	Texex Dan River	**Rig Rlse Date:**	2/28/1977				



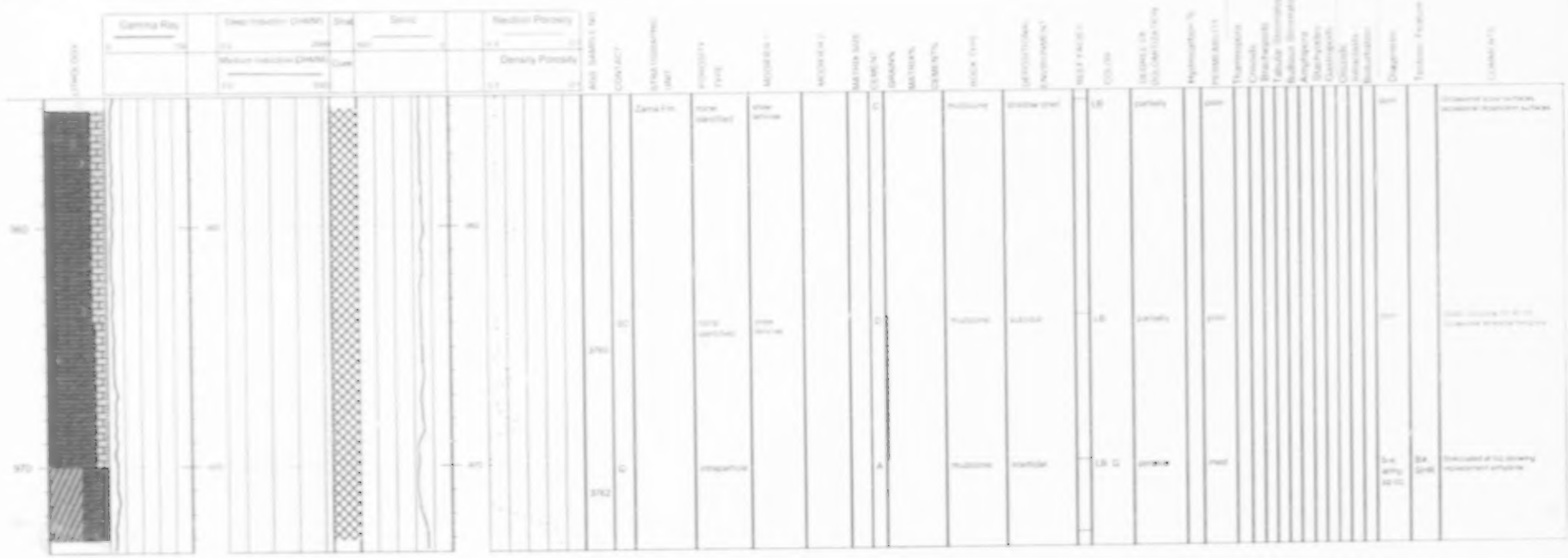
SITID:	126173	**KB Elevation:**	409.3	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.72176
SRCID:	1005043607000	**Total Depth:**	1062	**Easting:**	648647.06	**Longitude (83):**	-114.504295
UWI:	00/07-36-100-04W5-0	**Spud Date:**	2/14/1970	**Northing:**	6400260.16		
Well Name:	FPC Noel et al Harper	**Rig Rlse Date:**	3/11/1970				



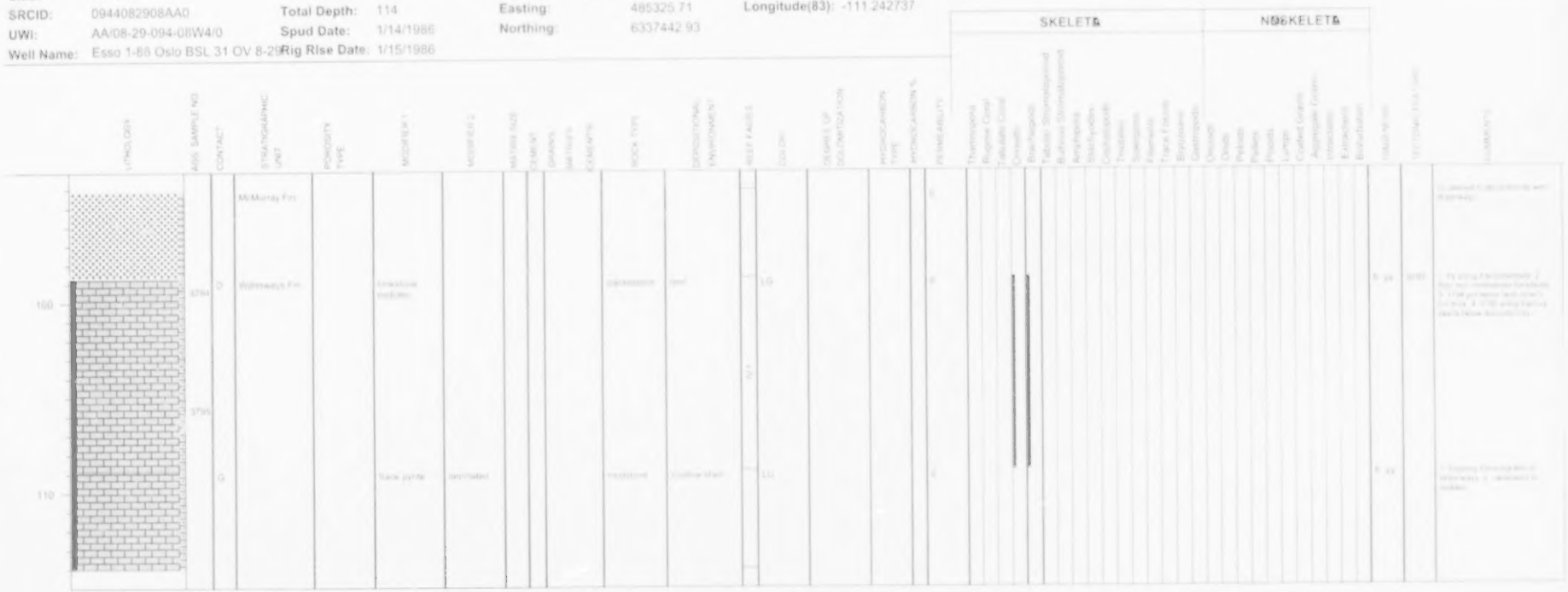
SITID:	125947	**KB Elevation:**	803.8	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.501991
SRCID:	985111708000	**Total Depth:**	1724	**Easting:**	575548.45	**Longitude (83):**	-115.739342
UWI:	00/08-17-098-11W5-0	**Spud Date:**	12/7/1985	**Northing:**	6373756.95		
Well Name:	Dome Home Talbot Lake	**Rig Rlse Date:**	1/3/1986				


SKELETAL
NON-SKELETAL
Gamma Ray
Deep Induction (OHMM)
Medium Induction (OHMM)
Sonic
Neutron Porosity
Density Porosity
LITHOLOGY
ASS. SAMPLE NO
CONTACT
STRATIGRAPHIC UNIT
POROSITY TYPE
MODIFIER 1
MODIFIER 2
MATRIX SIZE
CEMENT
GRAINS
MATRIX
CEMENT%
ROCK TYPE
DEPOSITIONAL ENVIRONMENT
REEF FACIES
COLOR
DEGREE OF DOLOMITIZATION
Hydrocarbon %
PERMEABILITY
Thrombolite
Cryptalgal
Bird Fenestral
Tubular Stromatoporoid
Bulbous Stromatoporoid
Amphipora
Stachyodes
Clathrocystis
Chaetetid
Chondrites
Intraclasts
Bioturbation
Dolomite
Limestone
Dolomite
Limestone
Dolomite
Limestone

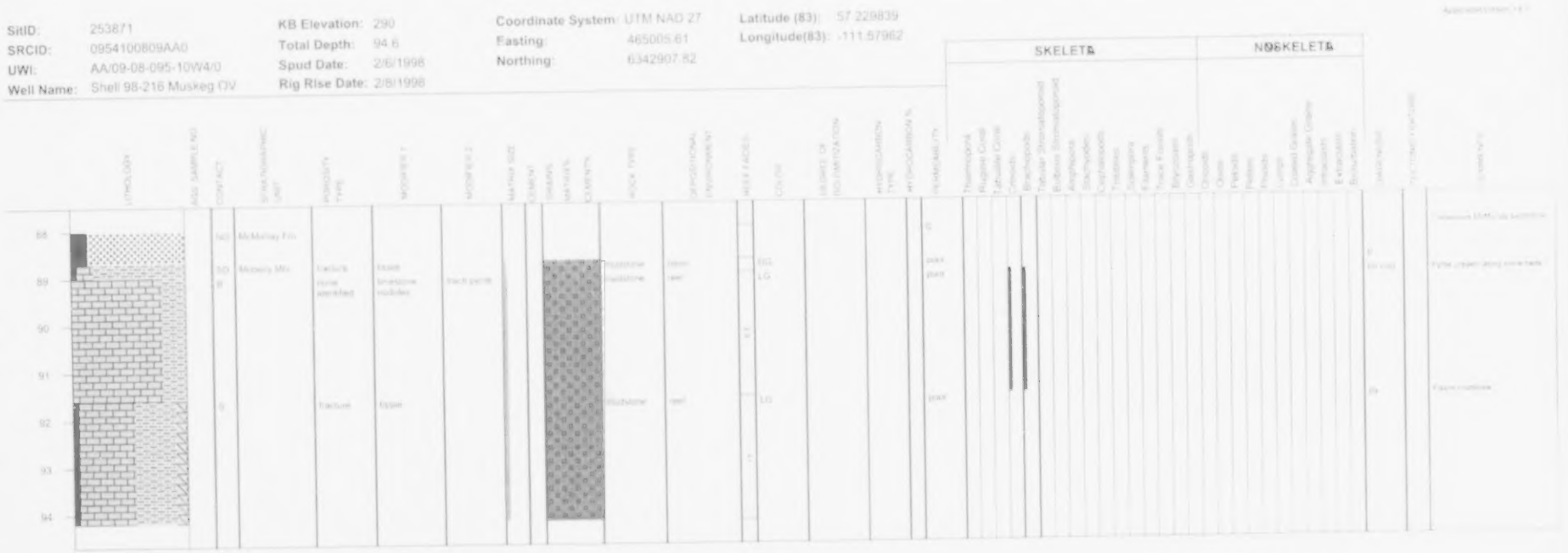
SITID:	127660	**KB Elevation:**	335.6	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.562851
SRCID:	1105112008000	**Total Depth:**	1190	**Easting:**	570569.29	**Longitude (83):**	-115.787033
UWI:	00/08-20-110-11W5/0	**Spud Date:**	2/28/1982	**Northing:**	6491804.66		
Well Name:	Gulf AEC Beaver Ranch	**Rig Rlse Date:**	3/14/1982				


Gamma Ray
Deep Induction (DIMN)
Medium Induction (DIMN)
Sonic
Neutron Porosity
Density Porosity
DISPLAYING
NON-DISPLAYING
Lithology
Coquina
Breccia
Tuffaceous
Bulbous Stromatolitic
Amphora
Stachyodes
Cuneiform
Oncoids
Microbialite
Dolomite
Anhydrite
Halite
Pseudomorphs
Diagenesis
Tectonic Feature
Comments
MD
MD
MD

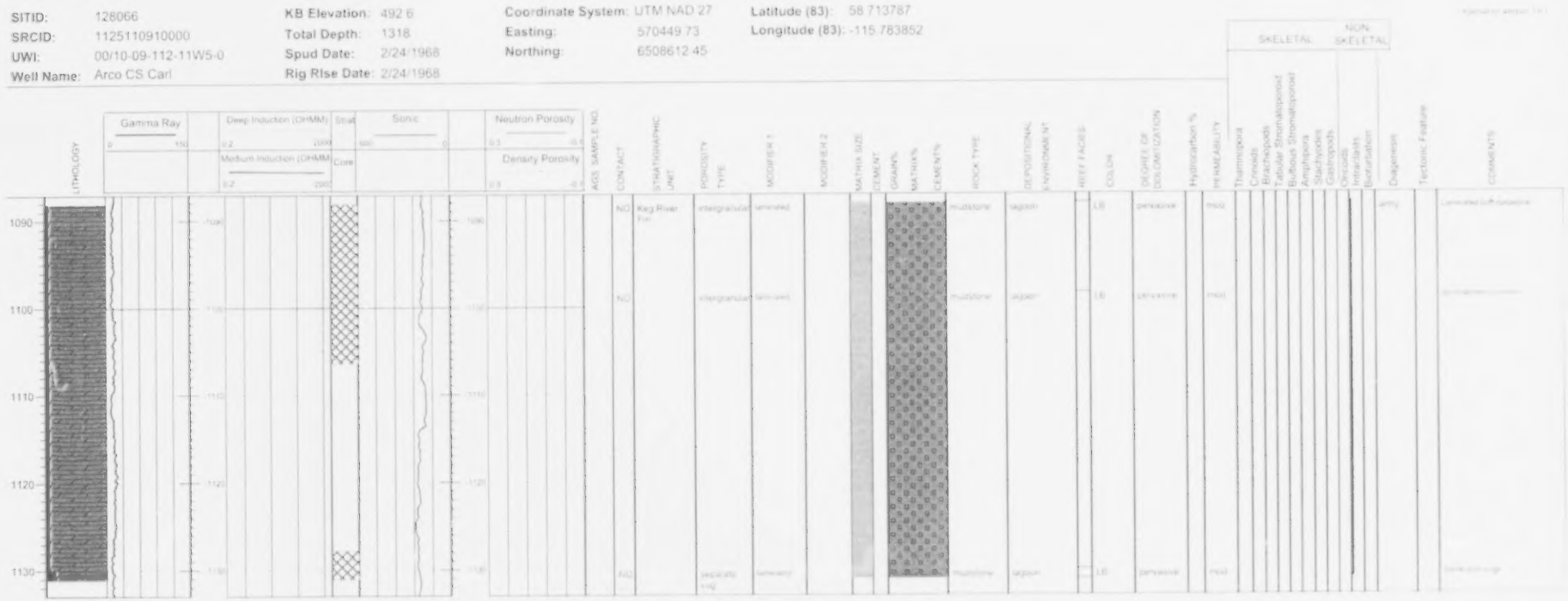
SitID:	144818	KB Elevation:	361.1	Coordinate System:	UTM NAD 27	Latitude (83):	57.18185
SRCID:	0944082908AA0	Total Depth:	114	Easting:	485325.71	Longitude(83):	-111.242737
UWI:	AA/08-29-094-08W4/0	Spud Date:	1/14/1986	Northing:	6337442.93		
Well Name:	Esso 1-86 Oslo BSL 31 OV 8-29	Rig Rlse Date:	1/15/1986				



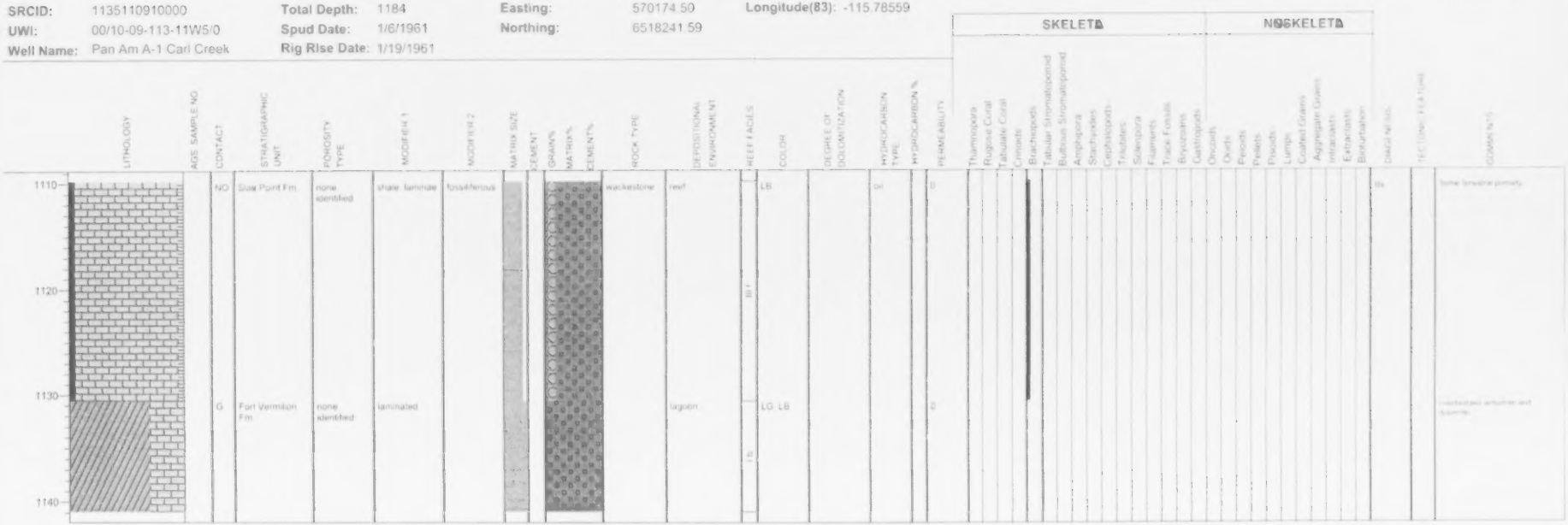
SitID:	253871	KB Elevation:	290	Coordinate System:	UTM NAD 27	Latitude (83):	57.229839
SRCID:	0954100809AA0	Total Depth:	94.6	Easting:	465005.61	Longitude(83):	-111.97962
UWI:	AA/09-08-095-10W4/0	Spud Date:	2/6/1998	Northing:	6342907.82		
Well Name:	Shell 98-218 Muskeg OV	Rig Rlse Date:	2/8/1998				


SKELETAL
NON-SKELETAL
LITHOLOGY
AGE SAMPLE NO
CONTACT
STRATIGRAPHIC UNIT
POROSITY TYPE
MODIFIER 1
MODIFIER 2
MATRIX SIZE
CEMENT
GRAINS
MATRIX %
CEMENT %
ROCK TYPE
DEPOSITIONAL ENVIRONMENT
BEDFACIES
COLOR
DEGREE OF BIOTURBATION
HYDROCARBON TYPE
HYDROCARBON %
PERMEABILITY
Foraminifera
Rugose Coral
Tabulate Coral
Corals
Brachiopods
Tubular Stromatoporoid
Bulbous Stromatoporoid
Amphipora
Stachyodids
Calcisiliceous
Trilobites
Calcispira
Fusiberella
Trace Fossils
Bryozoans
Gastropods
Ostracods
Oncoids
Peloids
Pellets
Fecals
Lithoclasts
Coated Grains
Aggregate Grains
Intraclasts
Extraclasts
Bioclasts
DEPOSITIONAL ENVIRONMENT
COMMENTS
McMurray Fm
Mcmurry Mbr
Fracture
none identified
Vuggy
Limestone
Dolostone
Fracture
Vuggy
Limestone
Dolostone
Dark
Light
Light
Dark
Light
Dark
Light
Dark

SITID:	128066	KB Elevation:	492.6	Coordinate System:	UTM NAD 27	Latitude (83):	58.713787
SRCID:	1125110910000	Total Depth:	1318	Easting:	570449.73	Longitude (83):	-115.783852
UWI:	00/10-09-112-11W5-0	Spud Date:	2/24/1968	Northing:	6508612.45		
Well Name:	Arco CS Carl	Rig Rlse Date:	2/24/1968				

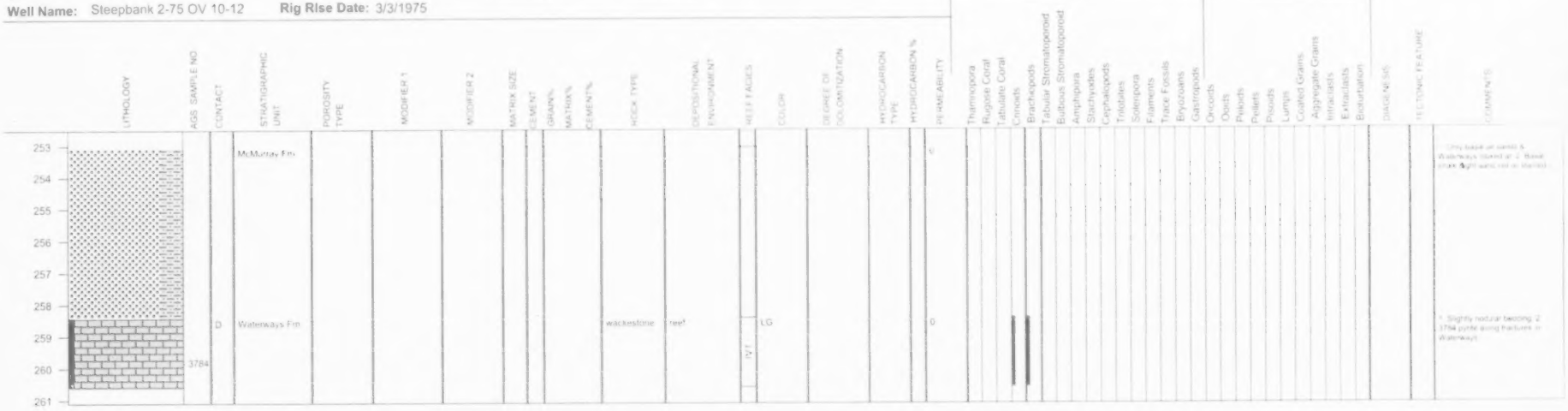


SitID:	128156	**KB Elevation:**	779.4	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.80029
SRCID:	1135110910000	**Total Depth:**	1184	**Easting:**	570174.50	**Longitude(83):**	-115.78559
UWI:	00/10-09-113-11W5/0	**Spud Date:**	1/6/1961	**Northing:**	6518241.59		
Well Name:	Pan Am A-1 Carl Creek	**Rig Rlse Date:**	1/19/1961				

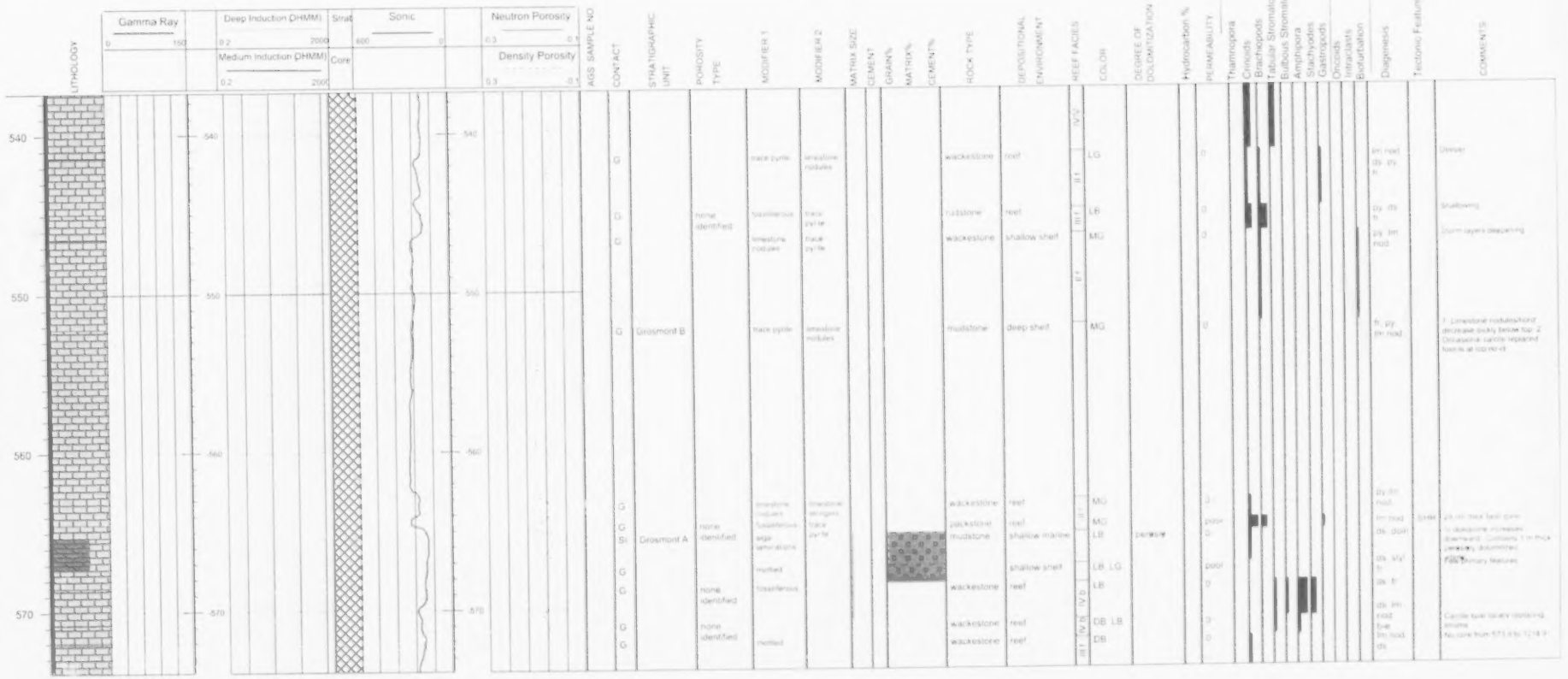


SitID:	120436	**KB Elevation:**	521.5	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.05516
SRCID:	0934071210AA0	**Total Depth:**	267.3	**Easting:**	501165.28	**Longitude(83):**	-110.98079
UWI:	00/10-12-093-07W4/0	**Spud Date:**	2/3/1975	**Northing:**	6323313.95		
Well Name:	Steepbank 2-75 OV 10-12	**Rig Rlse Date:**	3/3/1975				

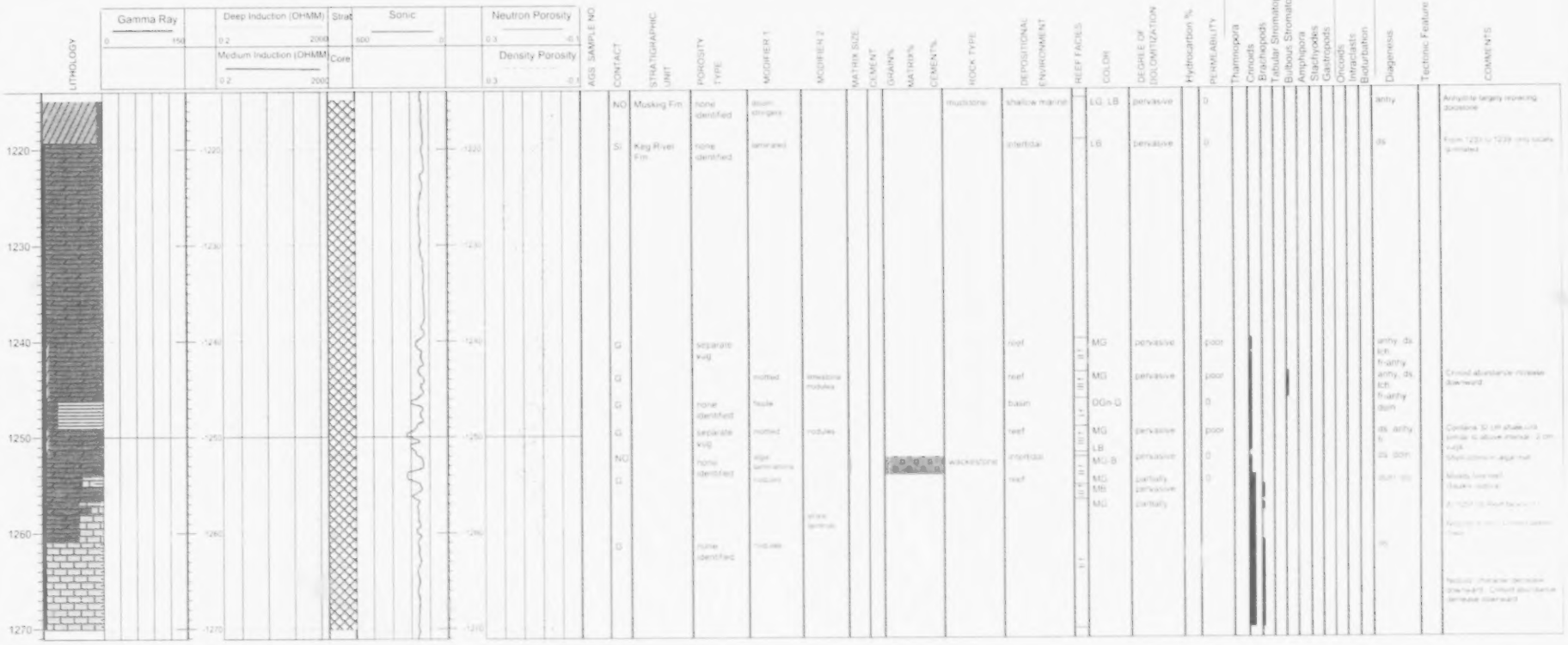
Application version 1.6.1



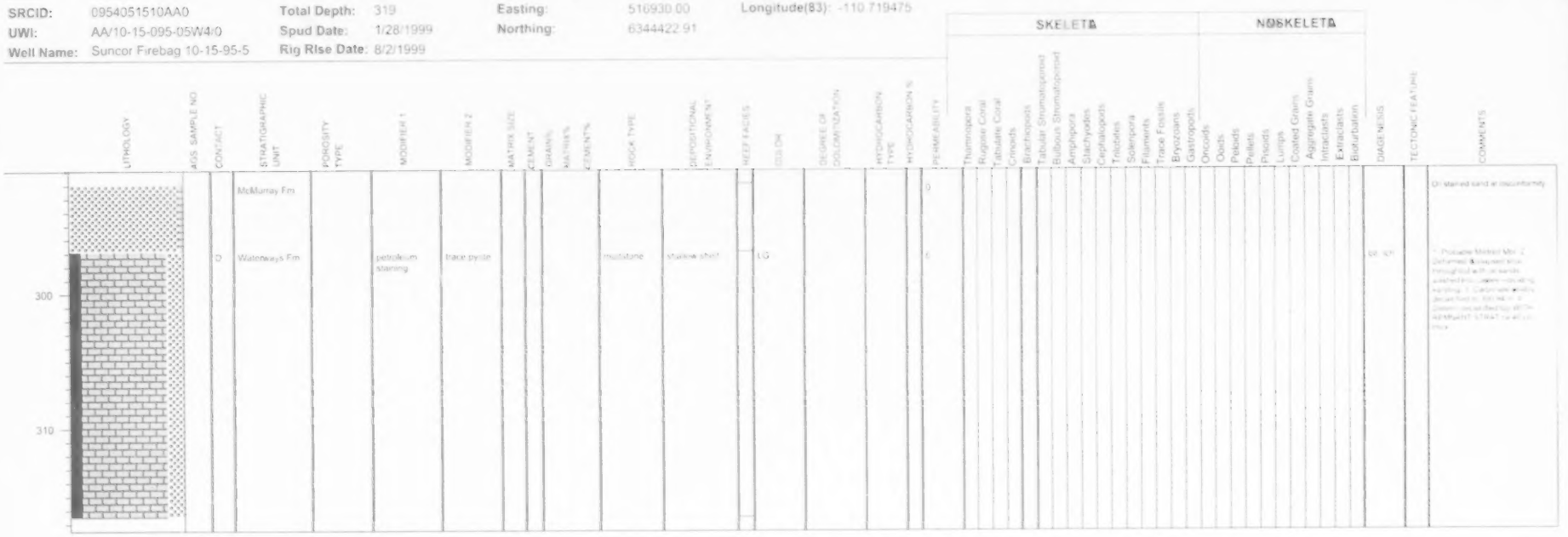
SITID:	125587	**KB Elevation:**	531.9	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.42054
SRCID:	975061310000	**Total Depth:**	1279	**Easting:**	630835.15	**Longitude (83):**	-114.82149
UWI:	00/10-13-097-06W5/0	**Spud Date:**	1/28/1972	**Northing:**	6366084.69		
Well Name:	Cheson CON-SUP Circle	**Rig Rlse Date:**	2/25/1972				



SITID:	125587	**KB Elevation:**	531.9	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.42054
SRCID:	975061310000	**Total Depth:**	1279	**Easting:**	630835.15	**Longitude (83):**	-114.82149
UWI:	00/10-13-097-06W5/0	**Spud Date:**	1/28/1972	**Northing:**	6366084.69		
Well Name:	Chevron CDN-SUP Circle	**Rig Rlse Date:**	2/25/1972				



SitID:	265296	**KB Elevation:**	579	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.244473
SRCID:	0954051510AA0	**Total Depth:**	319	**Easting:**	516930.00	**Longitude(83):**	-110.719475
UWI:	AA/10-15-095-05W4/0	**Spud Date:**	1/28/1999	**Northing:**	6344422.91		
Well Name:	Suncor Firebag 10-15-95-5	**Rig Rlse Date:**	8/2/1999				

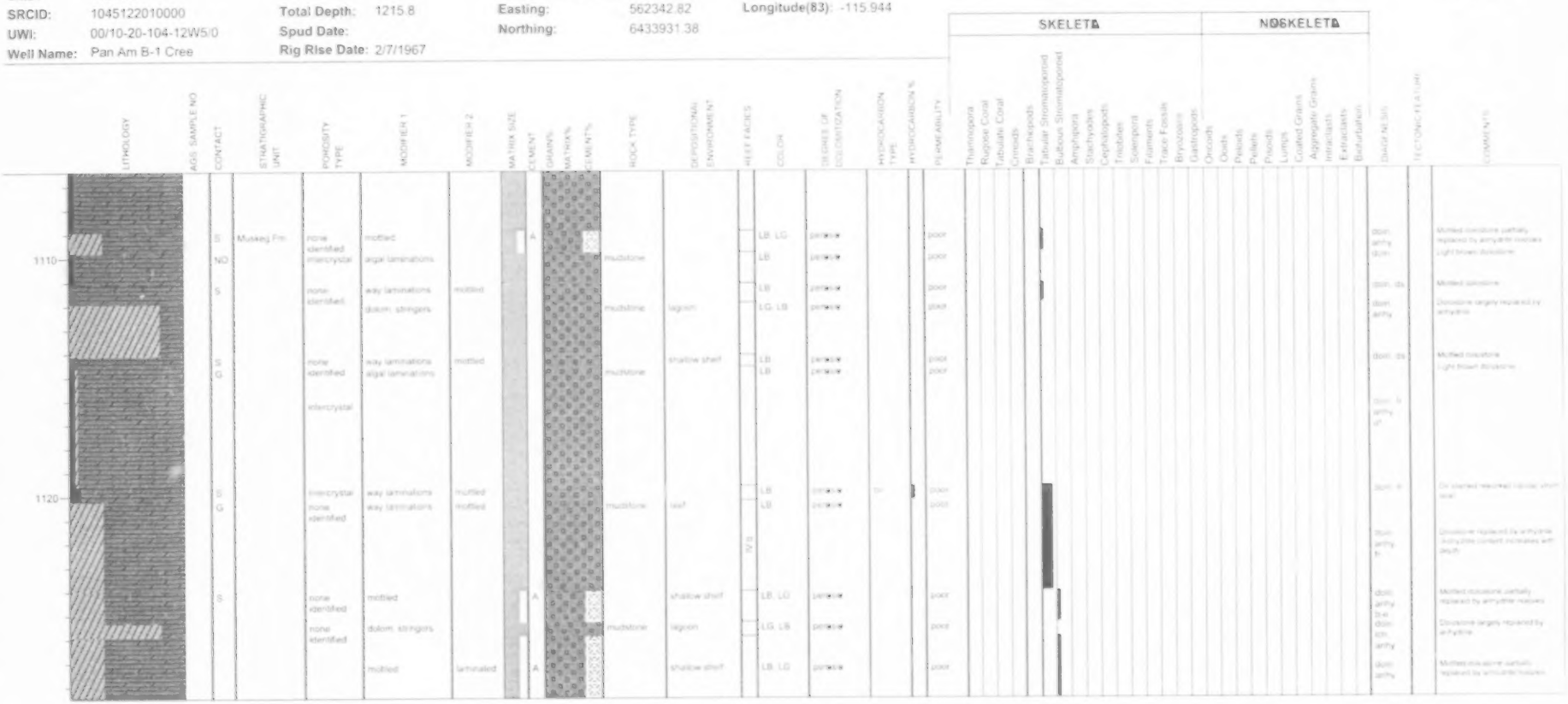


SitID: 126635
SRCID: 1045122010000
UWI: 00/10-20-104-12W5/0
Well Name: Pan Am B-1 Cree

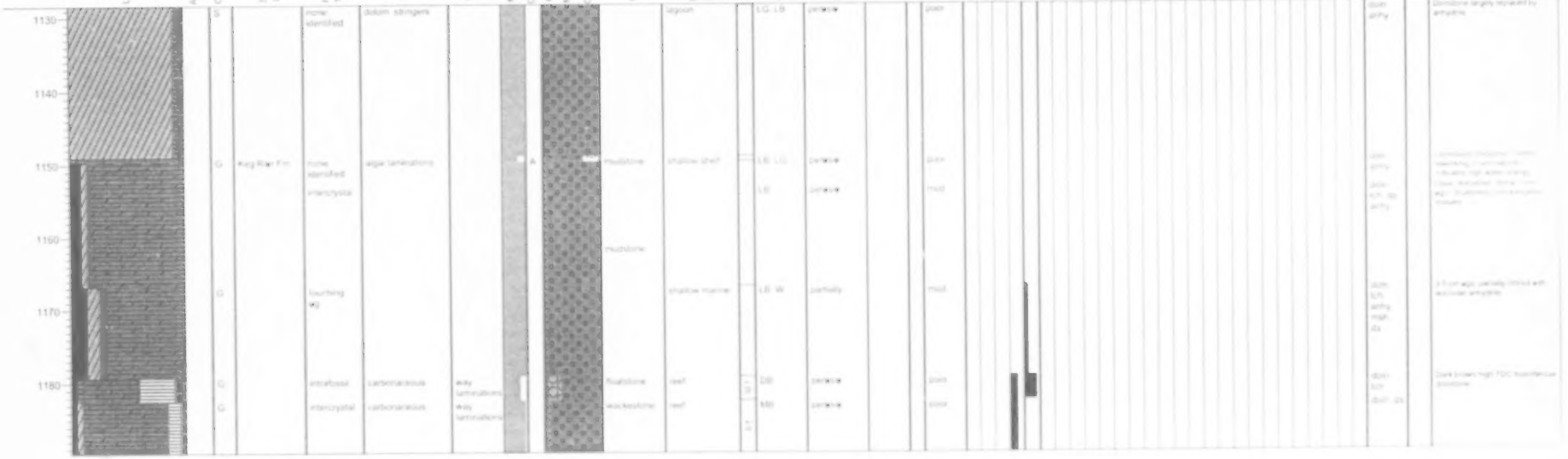
KB Elevation: 327.4
Total Depth: 1215.8
Spud Date:
Rig Rise Date: 2/7/1967

Coordinate System: UTM NAD 27
Easting: 562342.82
Northing: 6433931.38

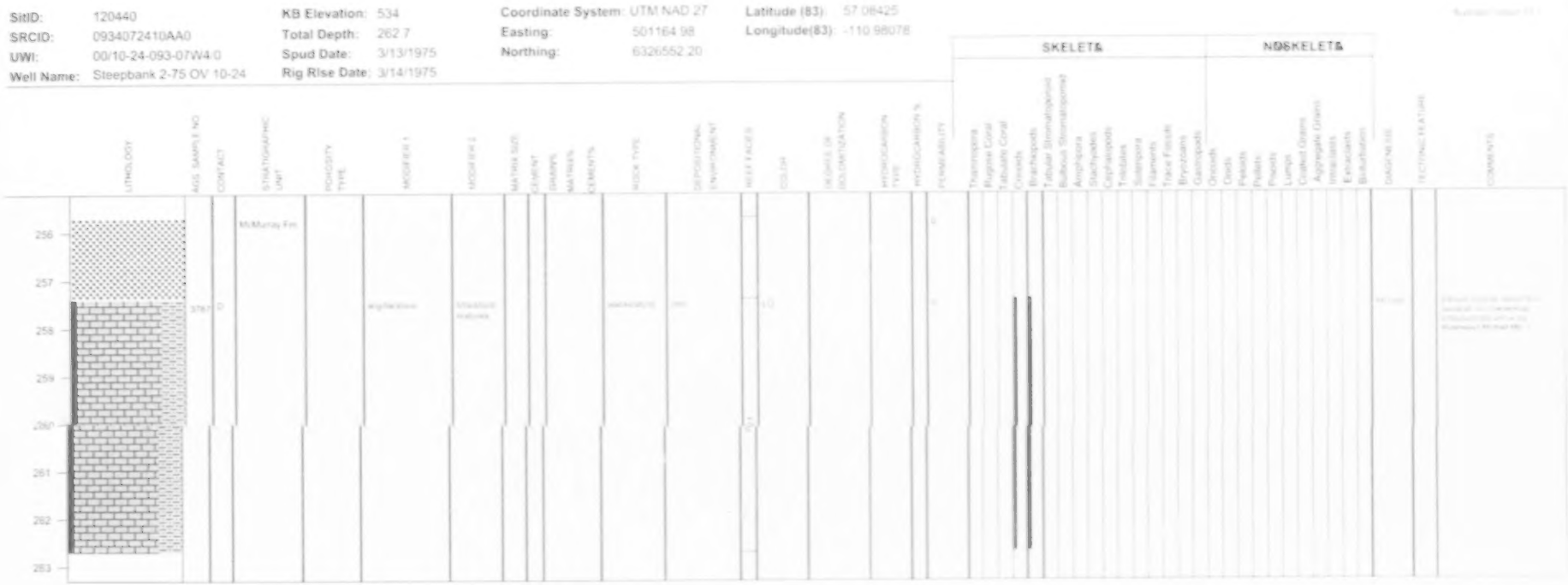
Latitude (83): 58.04441
Longitude(83): -115.944



SitID:	126635	KB Elevation:	327.4	Coordinate System:	UTM NAD 27	Latitude (83):	58.04441
SRCID:	1045122010000	Total Depth:	1215.8	Easting:	562342.82	Longitude(83):	-115.944
UWI:	00/10-20-104-12W5/0	Spud Date:		Northing:	6433931.38		
Well Name:	Pan Am B-1 Cree	Rig Rlse Date:	2/7/1967				



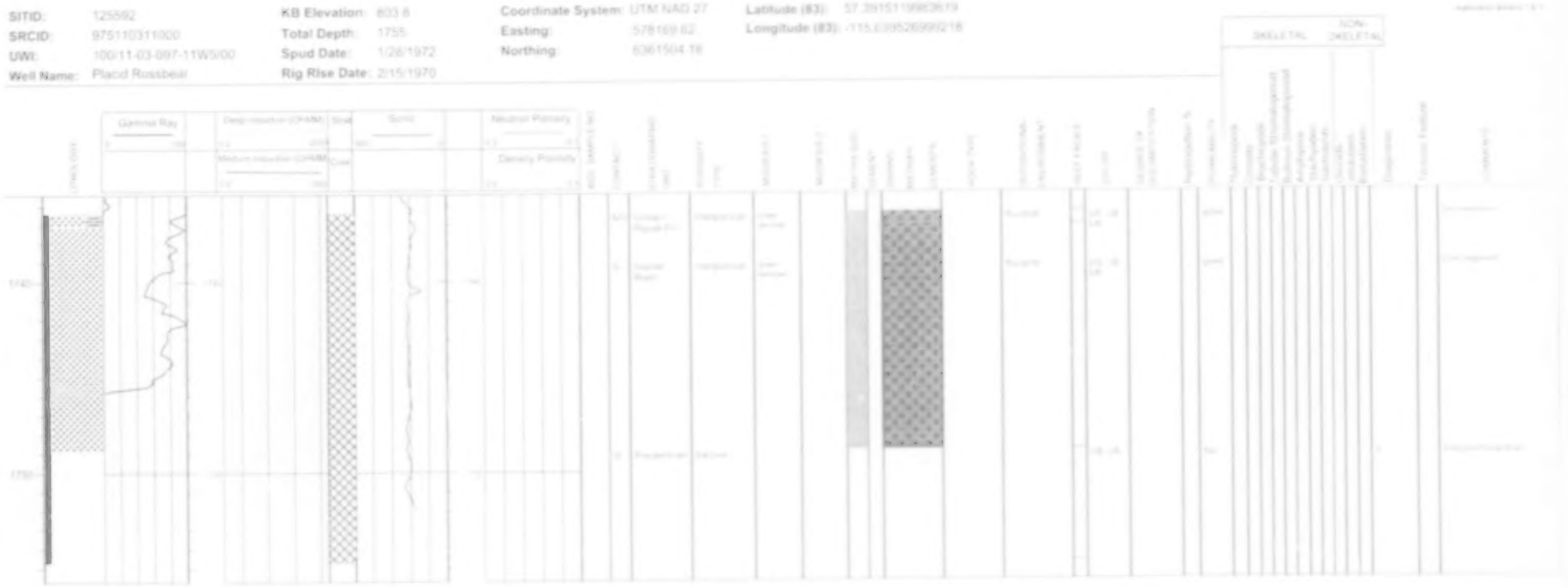
SitID:	120440	KB Elevation:	534	Coordinate System:	UTM NAD 27	Latitude (83):	57.08425
SRCID:	0934072410AA0	Total Depth:	262.7	Easting:	501164.98	Longitude(83):	-110.98078
UWI:	00/10-24-093-07W4/0	Spud Date:	3/13/1975	Northing:	6326552.20		
Well Name:	Steepbank 2-75 OV 10-24	Rig Rlse Date:	3/14/1975				



SITID:	127055	**KB Elevation:**	271.3	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.321297
SRCID:	1075032810000	**Total Depth:**	860	**Easting:**	650669.12	**Longitude (83):**	-114.427635
UWI:	00/10-28-107-03W5-0	**Spud Date:**	1/31/1970	**Northing**	6467151.06		
Well Name:	GPD Noel et al dan DD+	**Rig Rlse Date:**	2/15/1970				



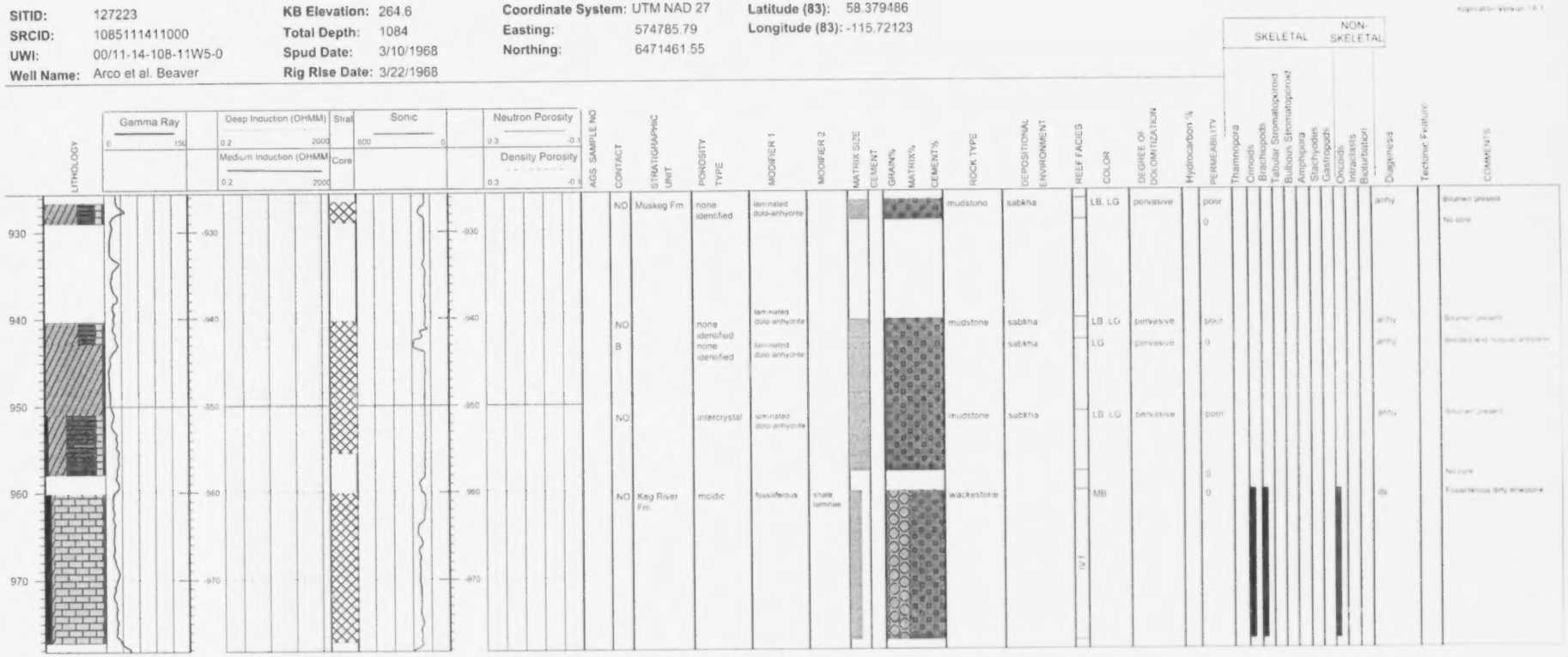
SITID:	125592	**KB Elevation:**	803.6	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.391511998639
SRCID:	975110311000	**Total Depth:**	1755	**Easting:**	578169.62	**Longitude (83):**	-115.039526999218
UWI:	100/11-03-097-11W5/00	**Spud Date:**	1/28/1972	**Northing:**	6361504.18		
Well Name:	Placid Rossbear	**Rig Rlse Date:**	2/15/1970				



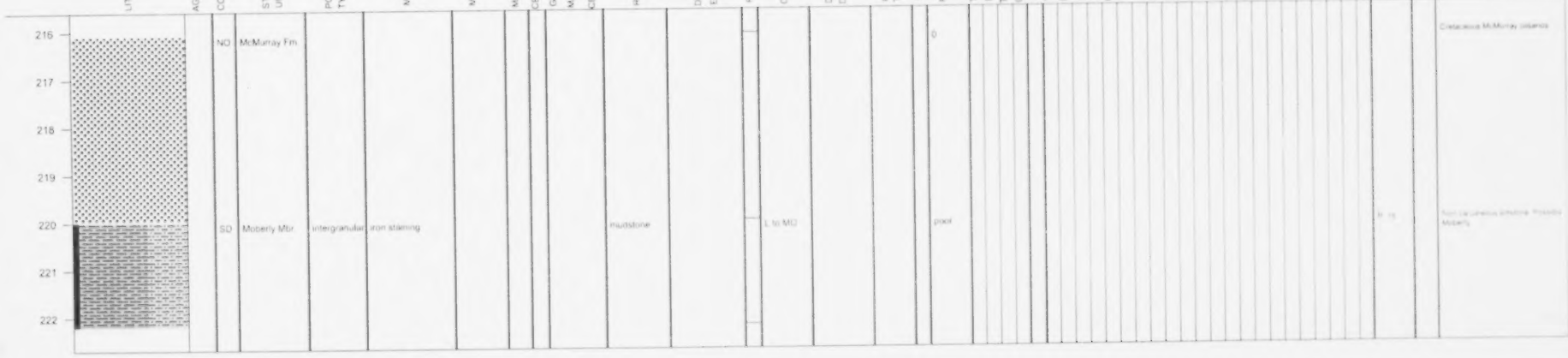
SitID:	171474	KB Elevation:	453.2	Coordinate System:	UTM NAD 27	Latitude (83):	58.79023
SRCID:	0904070711AA0	Total Depth:	203.5	Easting:	493227.33	Longitude(83):	-111.11087
UWI:	00/11-07-090-07W4/0	Spud Date:	6/2/1990	Northing:	6294162.37		
Well Name:	Mobil 90 Clarke Creek OV 11-7	Rig Rise Date:	6/2/1990				



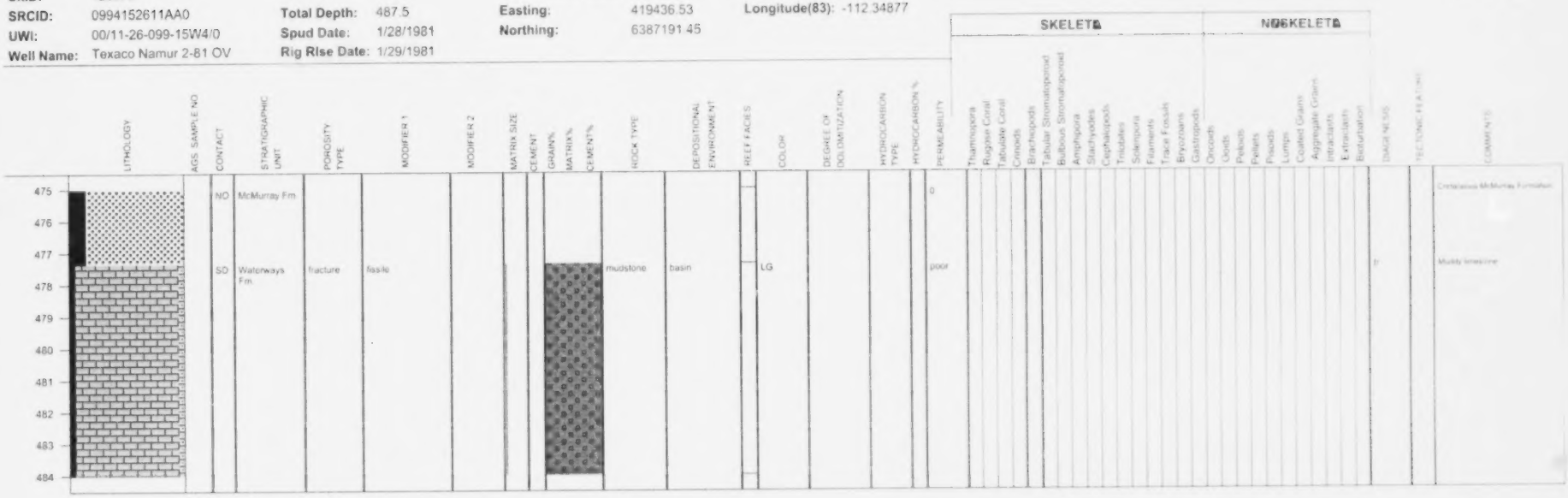
SITID:	127223	**KB Elevation:**	264.6	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.379486
SRCID:	1085111411000	**Total Depth:**	1084	**Easting:**	574785.79	**Longitude (83):**	-115.72123
UWI:	00/11-14-108-11W5-0	**Spud Date:**	3/10/1968	**Northing:**	6471461.55		
Well Name:	Arco et al. Beaver	**Rig Rlse Date:**	3/22/1968				



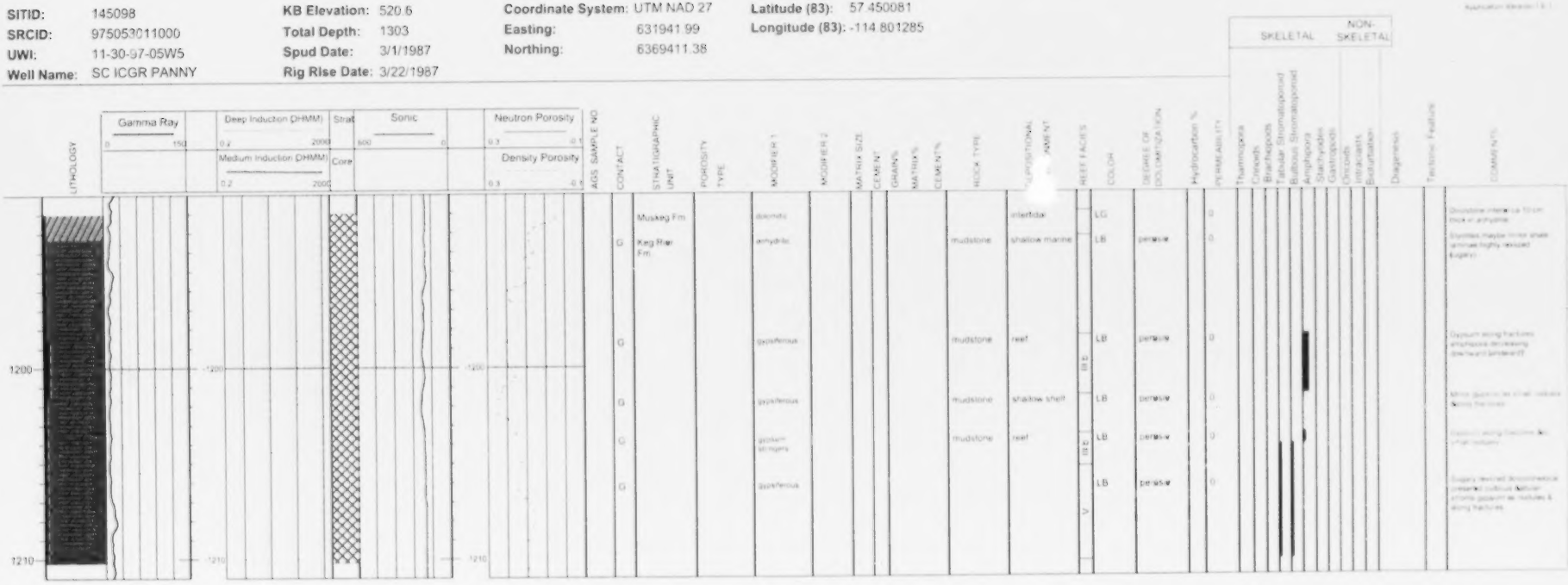
SitID:	120438	**KB Elevation:**	487.4	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.06982
SRCID:	0934071811AA0	**Total Depth:**	226.8	**Easting:**	492628.44	**Longitude(83):**	-111.12157
UWI:	00/11-18-093-07W4/0	**Spud Date:**	3/14/1975	**Northing:**	6324952.28		
Well Name:	Texex Steepbank 2-75 OV	**Rig Rlse Date:**	3/15/1975				



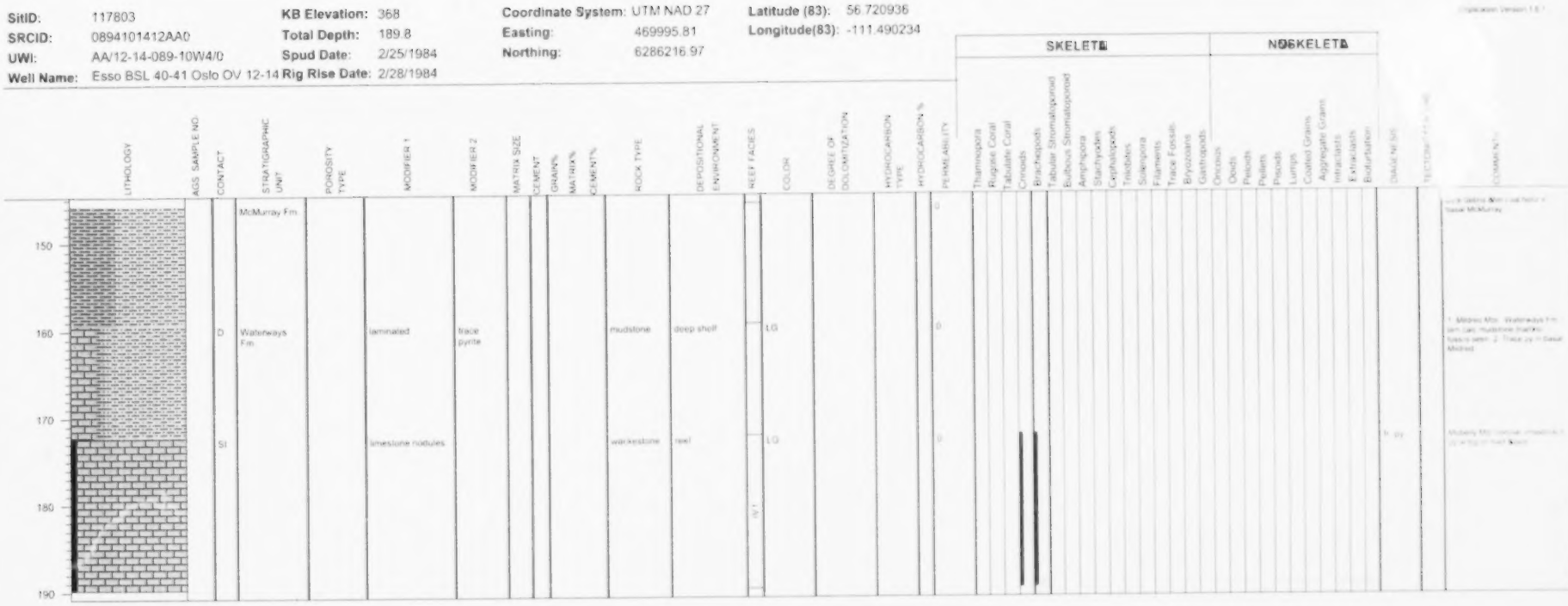
SitID:	126076	**KB Elevation:**	727.9	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.62177
SRCID:	0994152611AA0	**Total Depth:**	487.5	**Easting:**	419436.53	**Longitude(83):**	-112.34877
UWI:	00/11-26-099-15W4/0	**Spud Date:**	1/28/1981	**Northing:**	6387191.45		
Well Name:	Texaco Namur 2-81 OV	**Rig Rlse Date:**	1/29/1981				



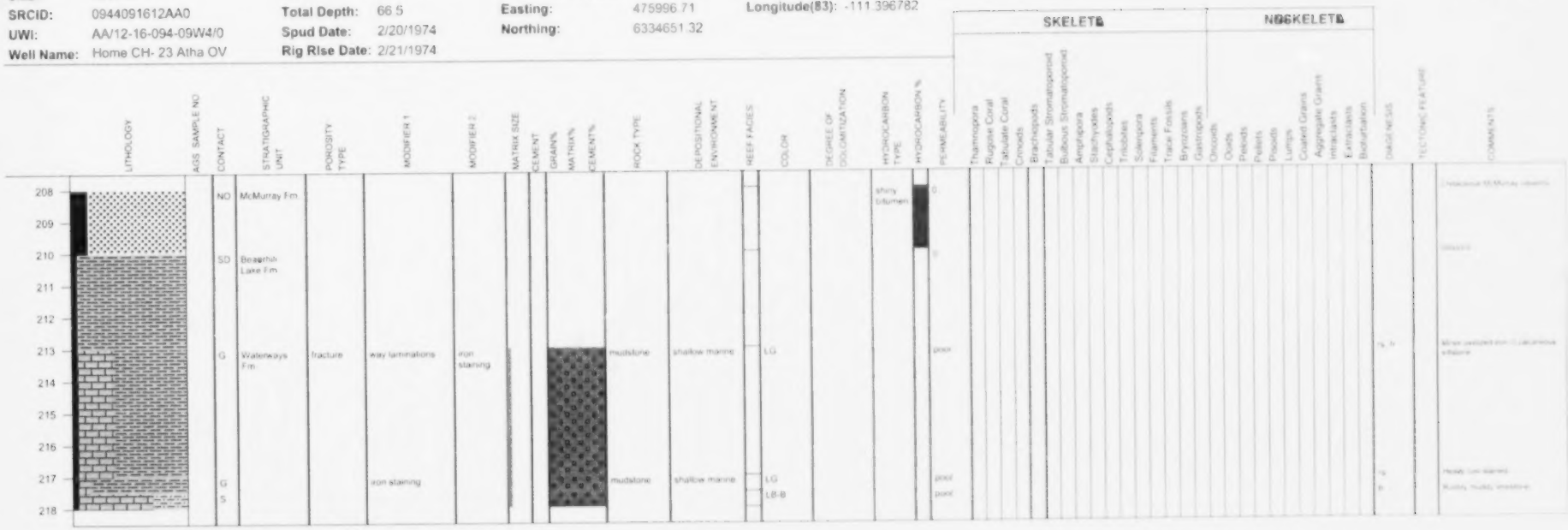
SITID:	145098	**KB Elevation:**	520.6	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.450081
SRCID:	975053011000	**Total Depth:**	1303	**Easting:**	631941.99	**Longitude (83):**	-114.801285
UWI:	11-30-97-05W5	**Spud Date:**	3/1/1987	**Northing:**	6369411.38		
Well Name:	SC ICGR PANNY	**Rig Rlse Date:**	3/22/1987				



SitID:	117803	**KB Elevation:**	368	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	56.720936
SRCID:	0894101412AA0	**Total Depth:**	189.8	**Easting:**	469995.81	**Longitude(83):**	-111.490234
UWI:	AA/12-14-089-10W4/0	**Spud Date:**	2/25/1984	**Northing:**	6286216.97		
Well Name:	Esso BSL 40-41 Oslo OV 12-14	**Rig Rise Date:**	2/28/1984				



SitID:	121744	**KB Elevation:**	326.1	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.15638
SRCID:	0944091612AA0	**Total Depth:**	66.5	**Easting:**	475996.71	**Longitude(83):**	-111.396782
UWI:	AA/12-16-094-09W4/0	**Spud Date:**	2/20/1974	**Northing:**	6334651.32		
Well Name:	Home CH- 23 Atha OV	**Rig Rlse Date:**	2/21/1974				

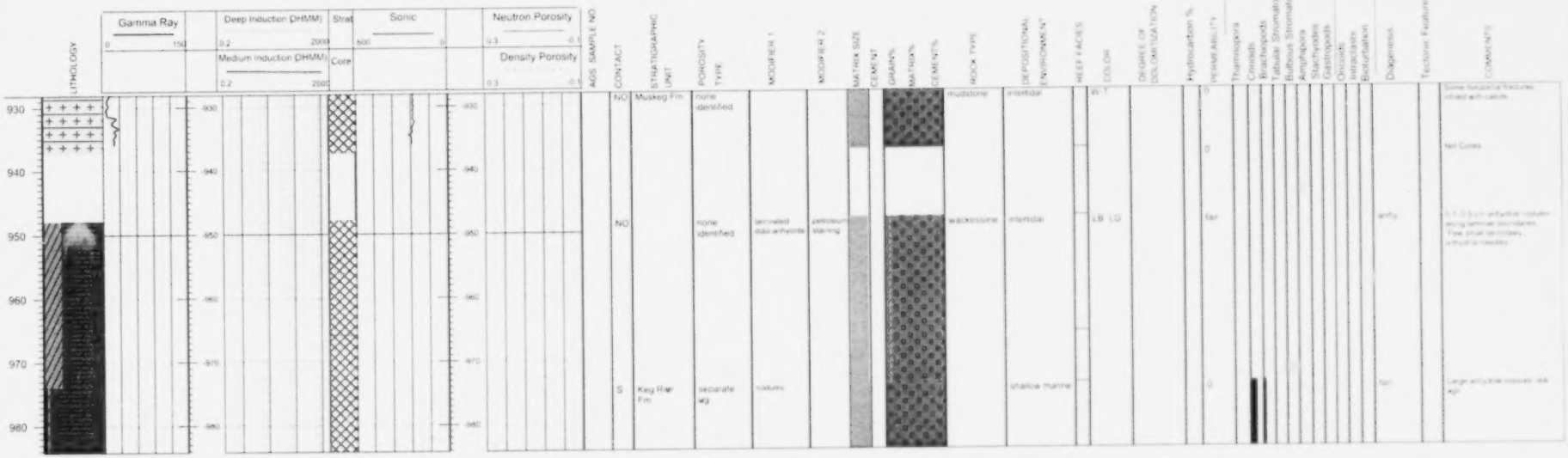


SITID: 128233
SRCID: 1145022512000
UWI: 00/12-25-114-02W5/0
Well Name: IOE Gardenr

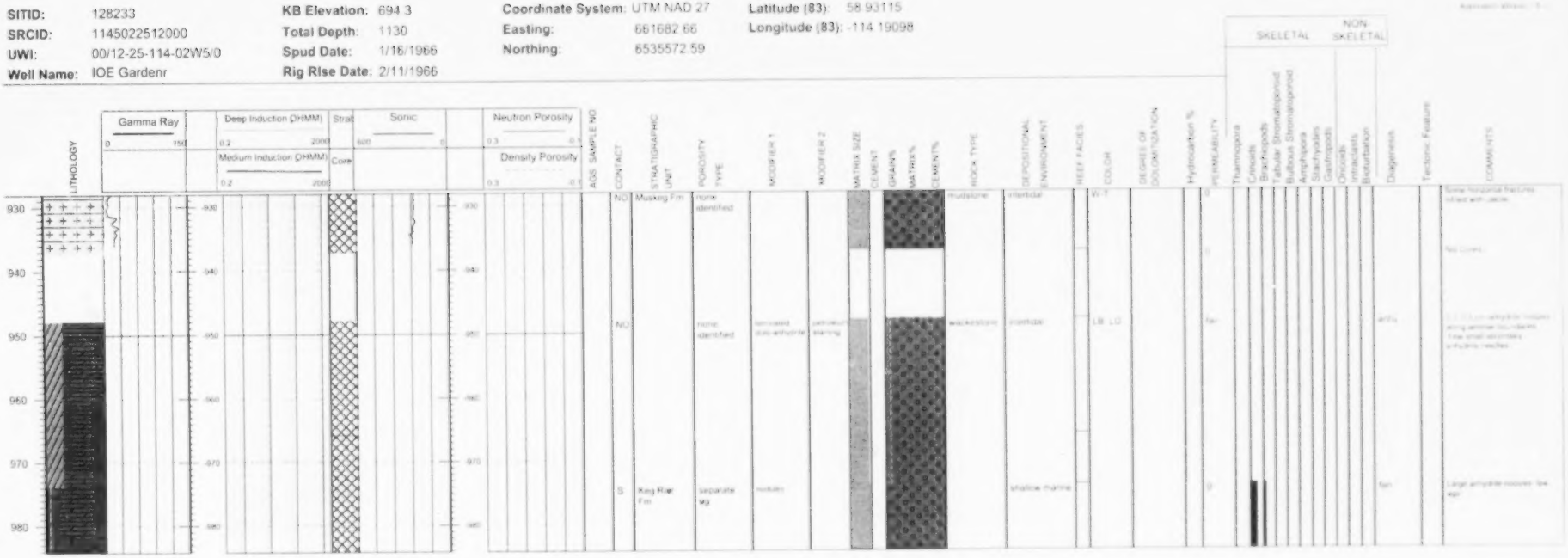
KB Elevation: 694.3
Total Depth: 1130
Spud Date: 1/16/1966
Rig Rlse Date: 2/11/1966

Coordinate System: UTM NAD 27
Easting: 661682.66
Northing: 6535572.59

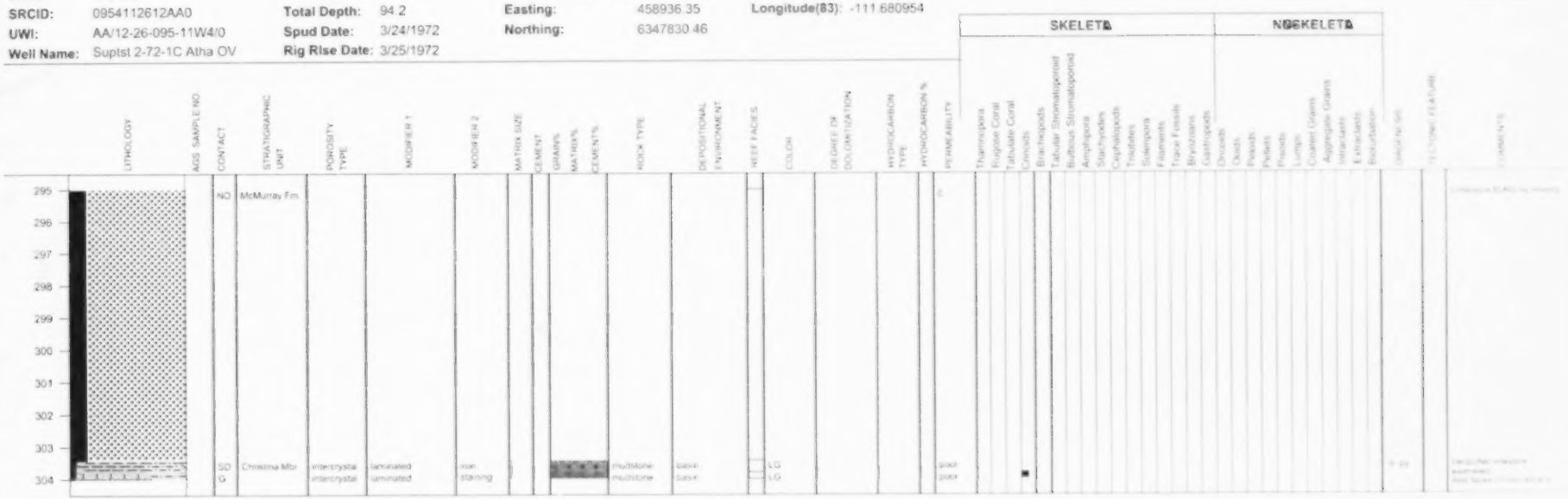
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Longitude (83): -114.19098



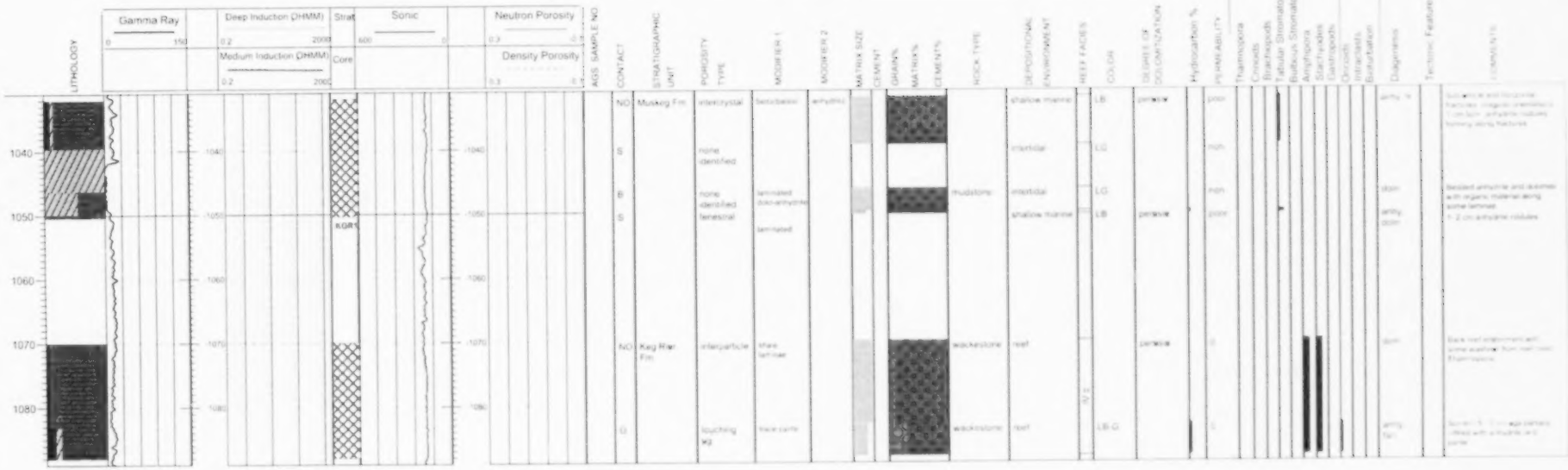
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UWI:	00/12-25-114-02W5/0	**Spud Date:**	1/16/1966	**Northing:**	6535572 59		
Well Name:	IOE Gardenr	**Rig Rlse Date:**	2/11/1966				



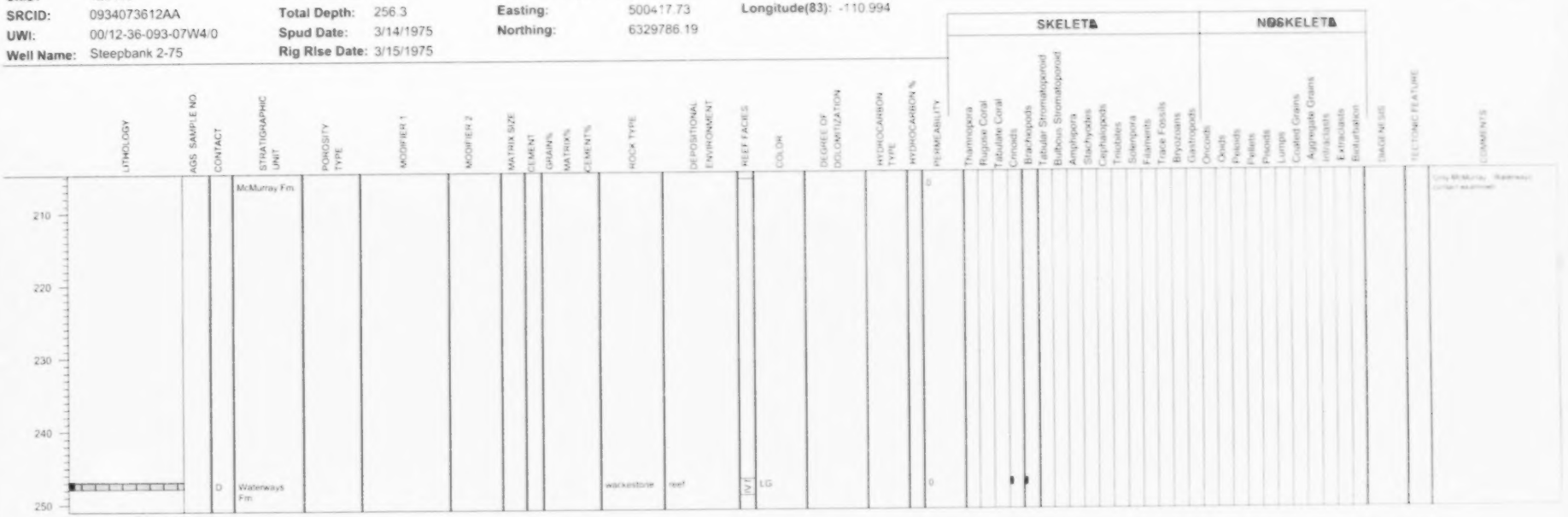
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SRCID:	0954112612AA0	**Total Depth:**	94.2	**Easting:**	458936.35	**Longitude(83):**	-111.680954
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Well Name:	Suptst 2-72-1C Atha OV	**Rig Rlse Date:**	3/25/1972				



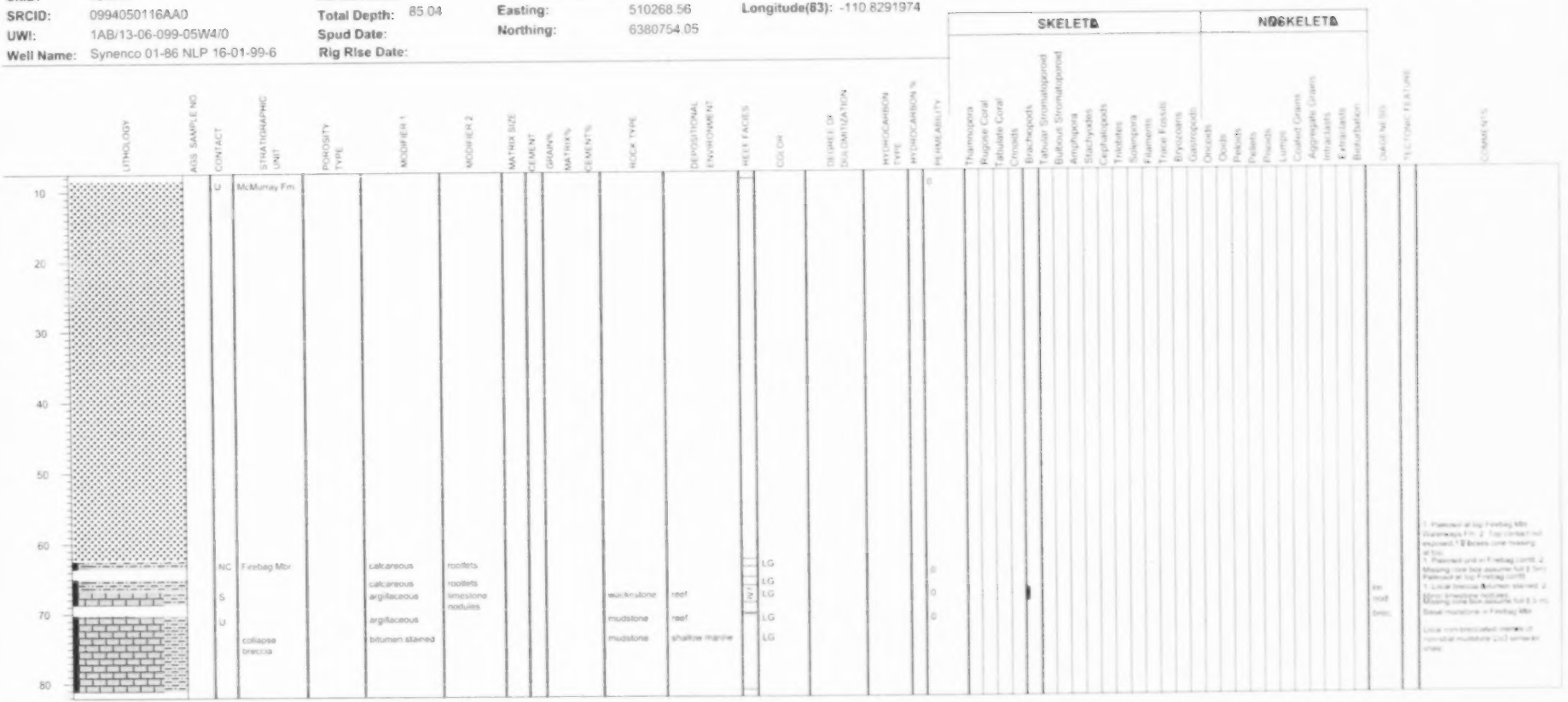
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SRCID:	1035103312000	**Total Depth:**	1159	**Easting:**	583061.00	**Longitude (83):**	-115.595284
UWI:	00/12-33-103-10W5-0	**Spud Date:**	2/4/1985	**Northing:**	6427926.61		
Well Name:	Amoco Mikkwa	**Rig Rlse Date:**	2/23/1985				



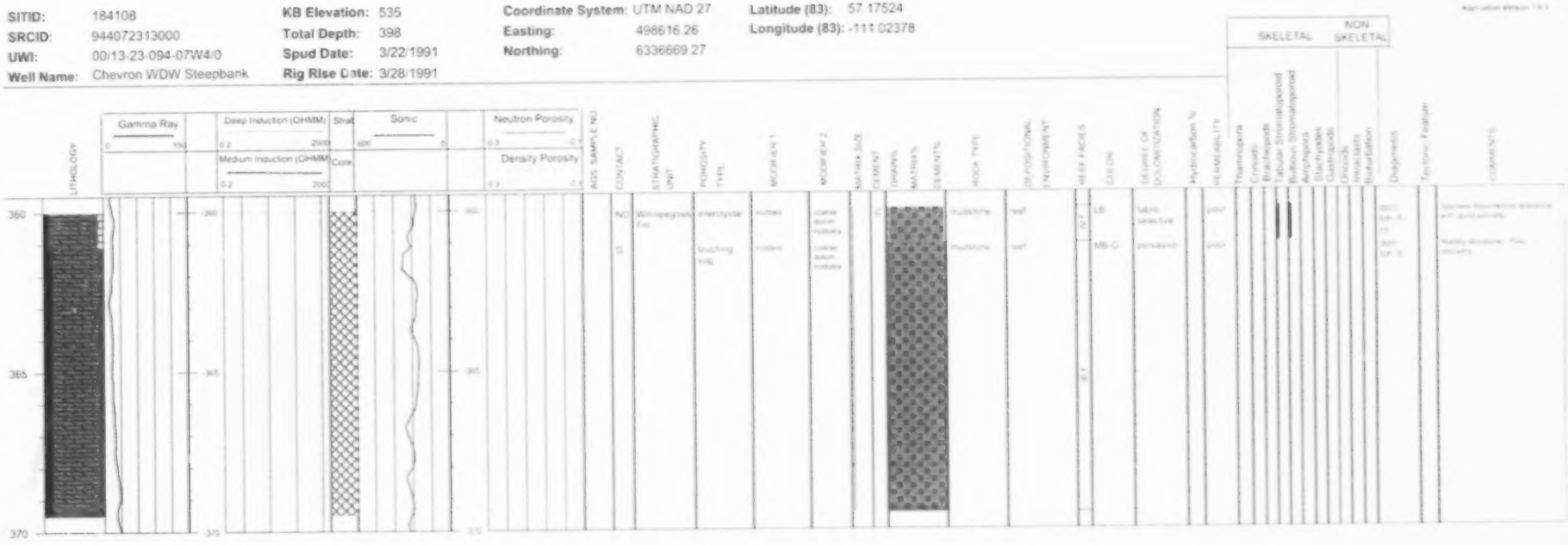
SitID:	120445	**KB Elevation:**	536.8	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.11341
SRCID:	0934073612AA	**Total Depth:**	256.3	**Easting:**	500417.73	**Longitude(83):**	-110.994
UWI:	00/12-36-093-07W4/0	**Spud Date:**	3/14/1975	**Northing:**	6329786.19		
Well Name:	Steepbank 2-75	**Rig Rlse Date:**	3/15/1975				



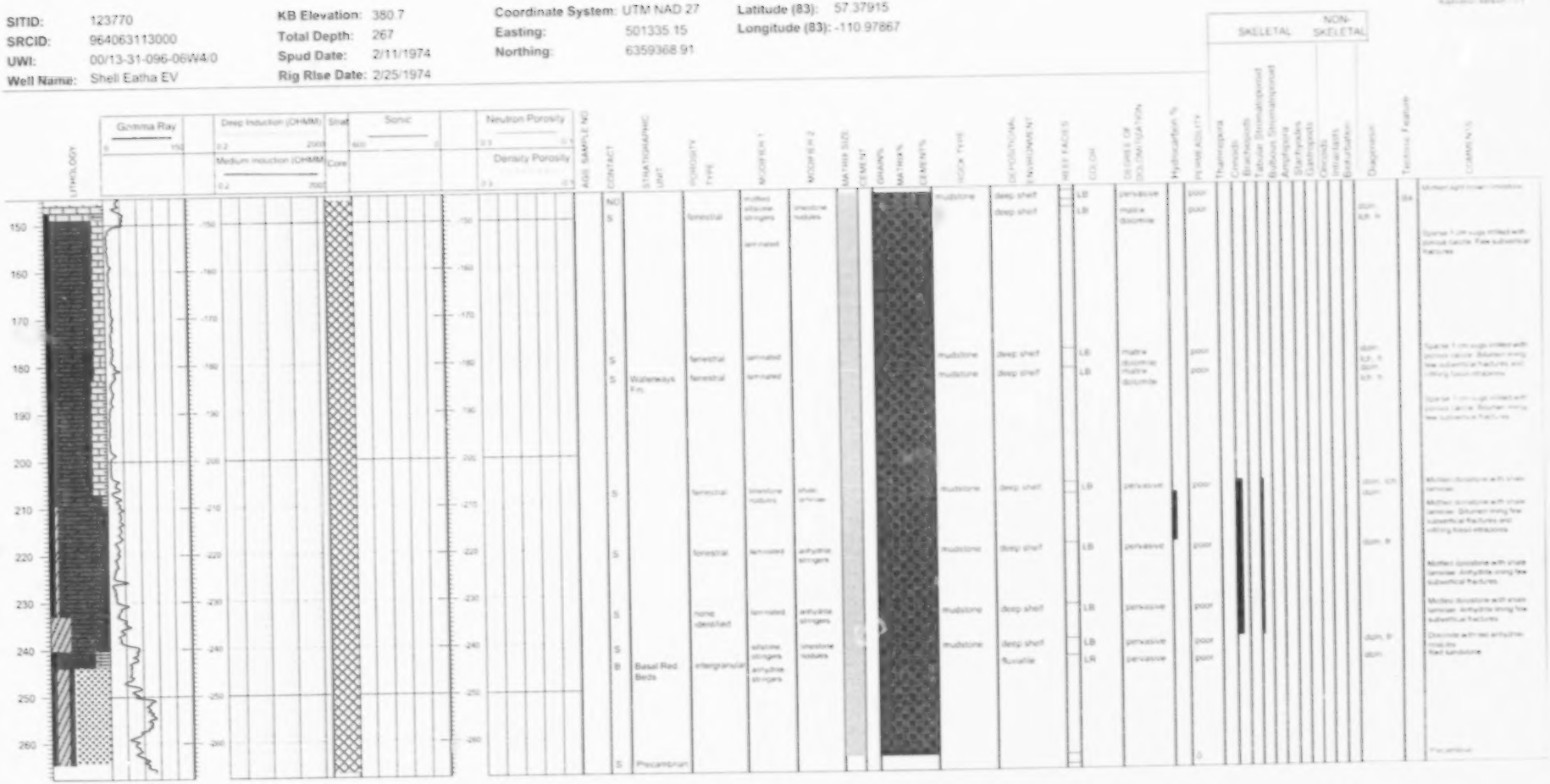
SitID:	324013	**KB Elevation:**		**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.57112826
SRCID:	0994050116AA0	**Total Depth:**	85.04	**Easting:**	510268.56	**Longitude(83):**	-110.8291974
UWI:	1AB/13-06-099-05W4/0	**Spud Date:**		**Northing:**	6380754.05		
Well Name:	Synenco 01-86 NLP 16-01-99-6	**Rig Rlse Date:**					



SITID:	184108	**KB Elevation:**	535	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.17524
SRCID:	944072313000	**Total Depth:**	398	**Easting:**	498616.26	**Longitude (83):**	-111.02378
UWI:	00/13-23-094-07W4/0	**Spud Date:**	3/22/1991	**Northing:**	6336669.27		
Well Name:	Chevron WDW Steepbank	**Rig Rise Date:**	3/28/1991				



SITID:	123770	**KB Elevation:**	380.7	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.37915
SRCID:	964063113000	**Total Depth:**	267	**Easting:**	501335.15	**Longitude (83):**	-110.97867
UWI:	00/13-31-096-06W4/0	**Spud Date:**	2/11/1974	**Northing:**	6359368.91		
Well Name:	Shell Eatha EV	**Rig Rlse Date:**	2/25/1974				



SitID:	324169	**KB Elevation:**		**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57 5697865913598		
SRCID:	0994060114AB0	**Total Depth:**	109.19	**Easting:**	509460.08	**Longitude(83):**	-110.841853933586		
UWI:	AB/14-01-099-06W4/0	**Spud Date:**		**Northing:**	6380614.44				
Well Name:	Synenco 20-51 Firebag 14-01-99-6	**Rig Rlse Date:**	2/2/2001						

Application version 1.0.0

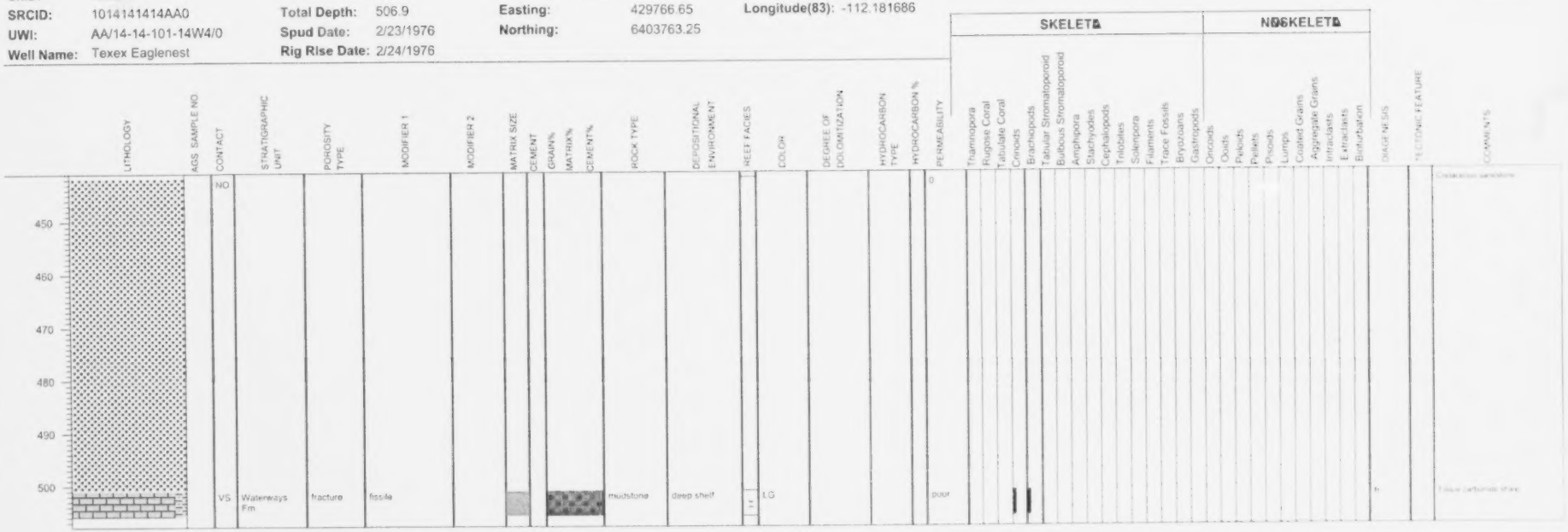
LITHOLOGY	AGS SAMPLE NO.	CONTACT	STRATIGRAPHIC UNIT	POROSITY TYPE	MODIFIER 1	MODIFIER 2	MATRIX SIZE	CEMENT	GRAIN%	MATRIX%	CEMENT%	ROCK TYPE	DEPOSITIONAL ENVIRONMENT	REEF FACIES	COLOR	DEGREE OF DOLOMITIZATION	HYDROCARBON TYPE	HYDROCARBON %	PERMEABILITY	SKELETAL: Thamnopora	Rugose Coral	Tabulate Coral	Crinoids	Brachiopods	Tabular Stromatoporoid	Bulbous Stromatoporoid	Amphipora	Stachyodes	Cephalopods	Trilobites	Solenpora	Filaments	Trace Fossils	Bryozoans	Gastropods	NON-SKELETAL: Oncoids	Ooids	Peloids	Pellets	Psoids	Lumps	Coated Grains	Aggregate Grains	Intraclasts	Extraclasts	Bioturbation	DIAGENESIS	TECTONIC FEATURE	COMMENTS
30		U	McMurray Fm.																0																														
40																																																			
50																																																			
60		U	Methy Fm.		algal laminations	bitumen stained						mudstone	intertidal		LG	pervasive			0																																	
		G			nodules	algal laminations						wackestone	intertidal		LG	pervasive			0																																	
		G			bitumen stained	argillaceous						wackestone	reef		LG	pervasive			0																																	
70																																																		

dit. (dom.)
bit.
bit.

No paleosol in Wabiskaw Formation (reset it on limestone), no collapse breccia at dolostone and therefore interpreted as Methy

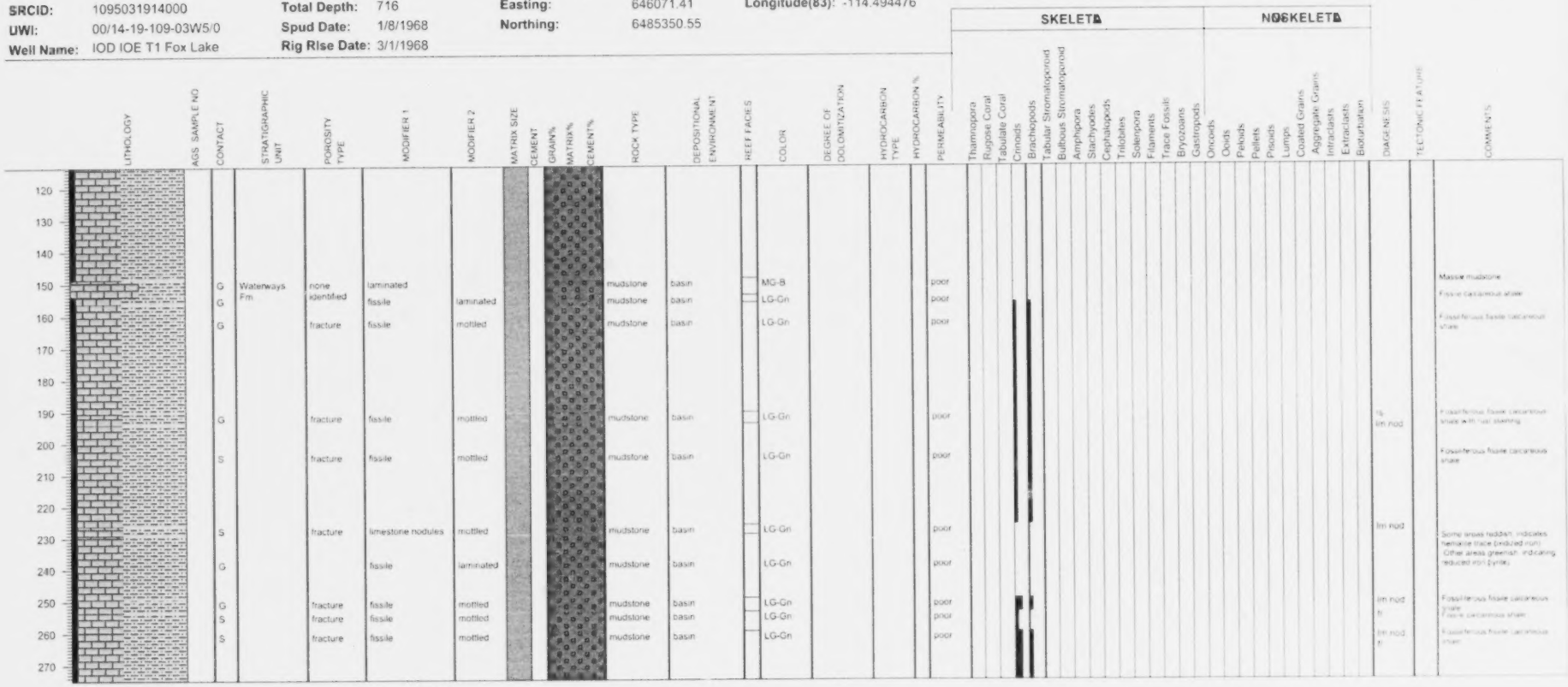
Locally argillaceous horizons, mm thick, non-stratified

SitID:	126241	**KB Elevation:**	730.3	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.772434
SRCID:	1014141414AA0	**Total Depth:**	506.9	**Easting:**	429766.65	**Longitude(83):**	-112.181686
UWI:	AA/14-14-101-14W4/0	**Spud Date:**	2/23/1976	**Northing:**	6403763.25		
Well Name:	Texex Eaglenest	**Rig Rise Date:**	2/24/1976				

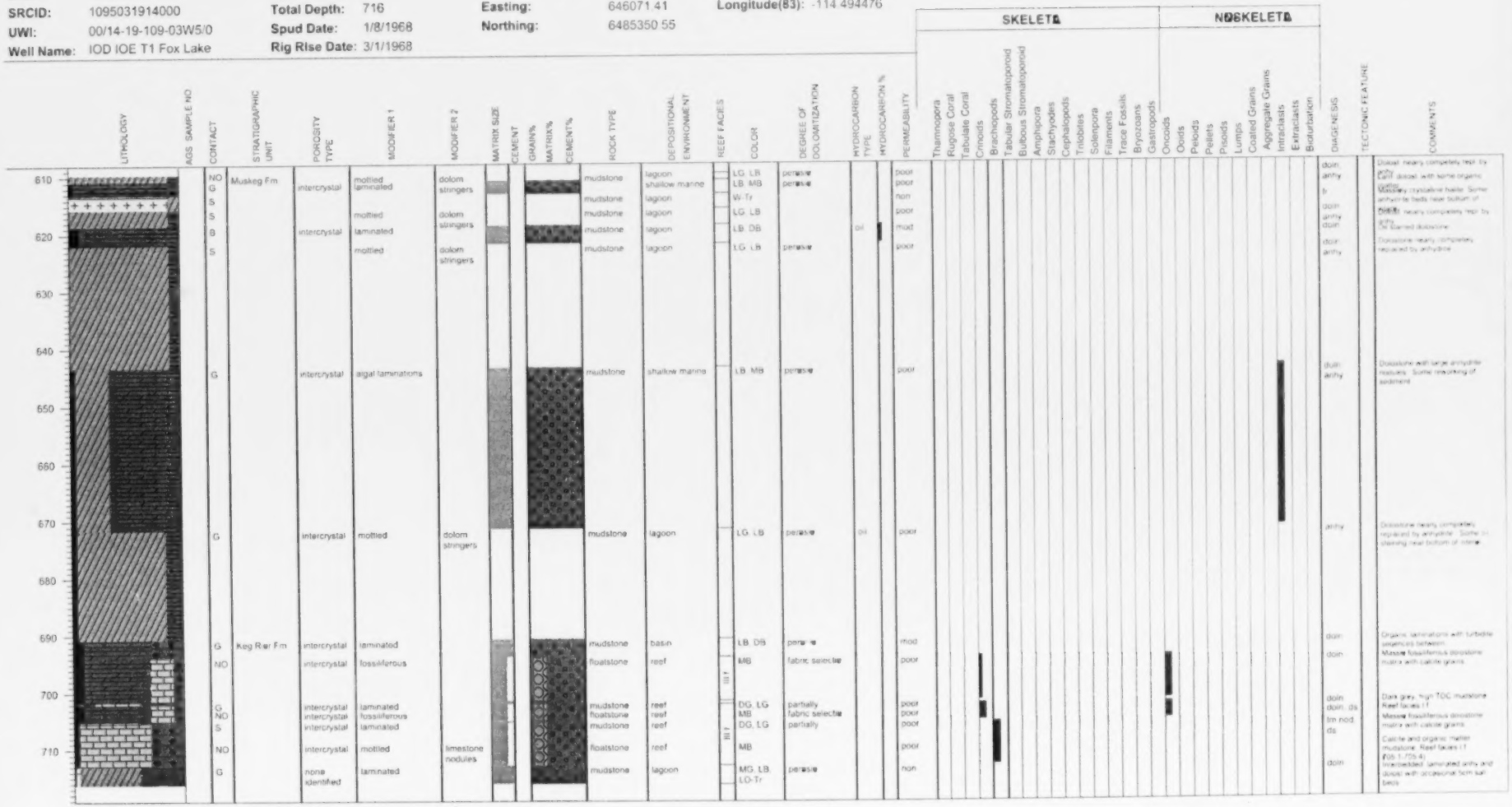


SitID:	127403	**KB Elevation:**	256	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.48615
SRCID:	1095031914000	**Total Depth:**	716	**Easting:**	646071.41	**Longitude(83):**	-114.494476
UWI:	00/14-19-109-03W5/0	**Spud Date:**	1/8/1968	**Northing:**	6485350.55		
Well Name:	IOD IOE T1 Fox Lake	**Rig Rlse Date:**	3/1/1968				

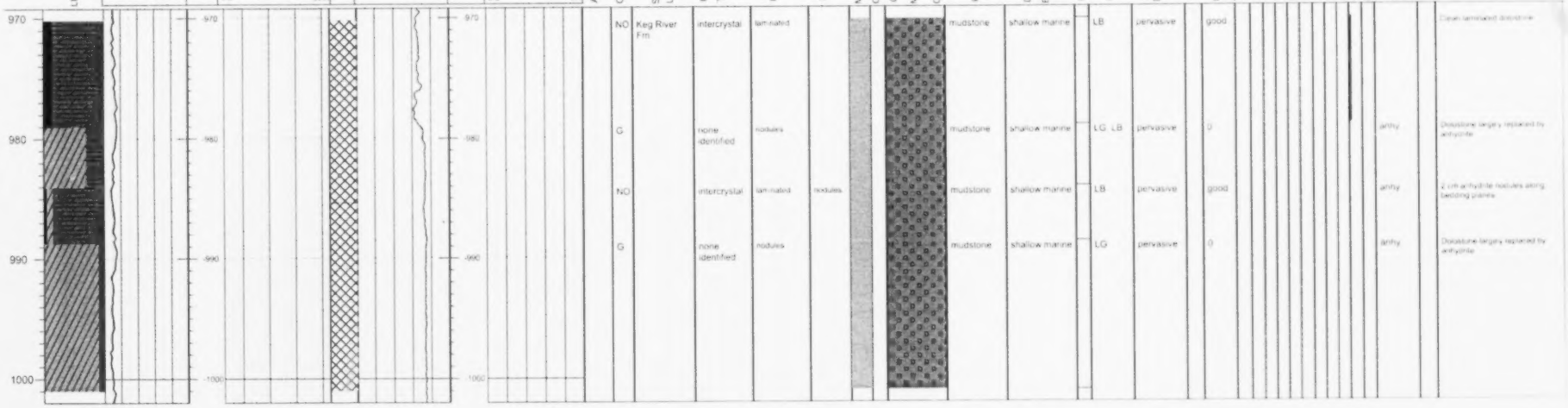
Application Version 7.6.1



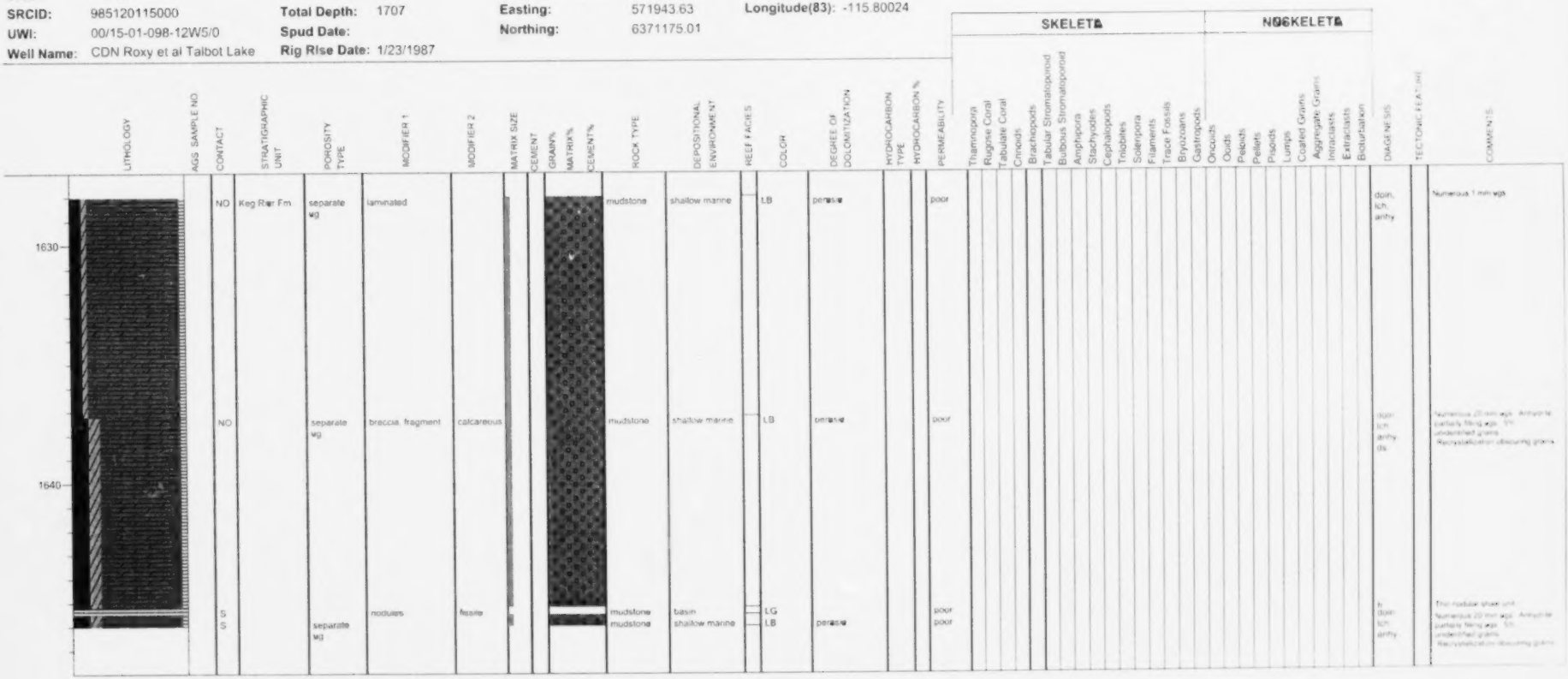
SitID:	127403	**KB Elevation:**	256	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.48615
SRCID:	1095031914000	**Total Depth:**	716	**Easting:**	646071.41	**Longitude(83):**	-114.494476
UWI:	00/14-19-109-03W5/0	**Spud Date:**	1/8/1968	**Northing:**	6485350.55		
Well Name:	IOD IOE T1 Fox Lake	**Rig Rlse Date:**	3/1/1968				



SITID:	127661	**KB Elevation:**	363.9	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.599655
SRCID:	1105113514000	**Total Depth:**	1187	**Easting:**	574228.01	**Longitude (83):**	-115.722801
UWI:	00/14-35-110-11W5-0	**Spud Date:**	1/12/1970	**Northing:**	6495971.45		
Well Name:	Shell Union FtVer	**Rig Rlse Date:**	2/1/1970				

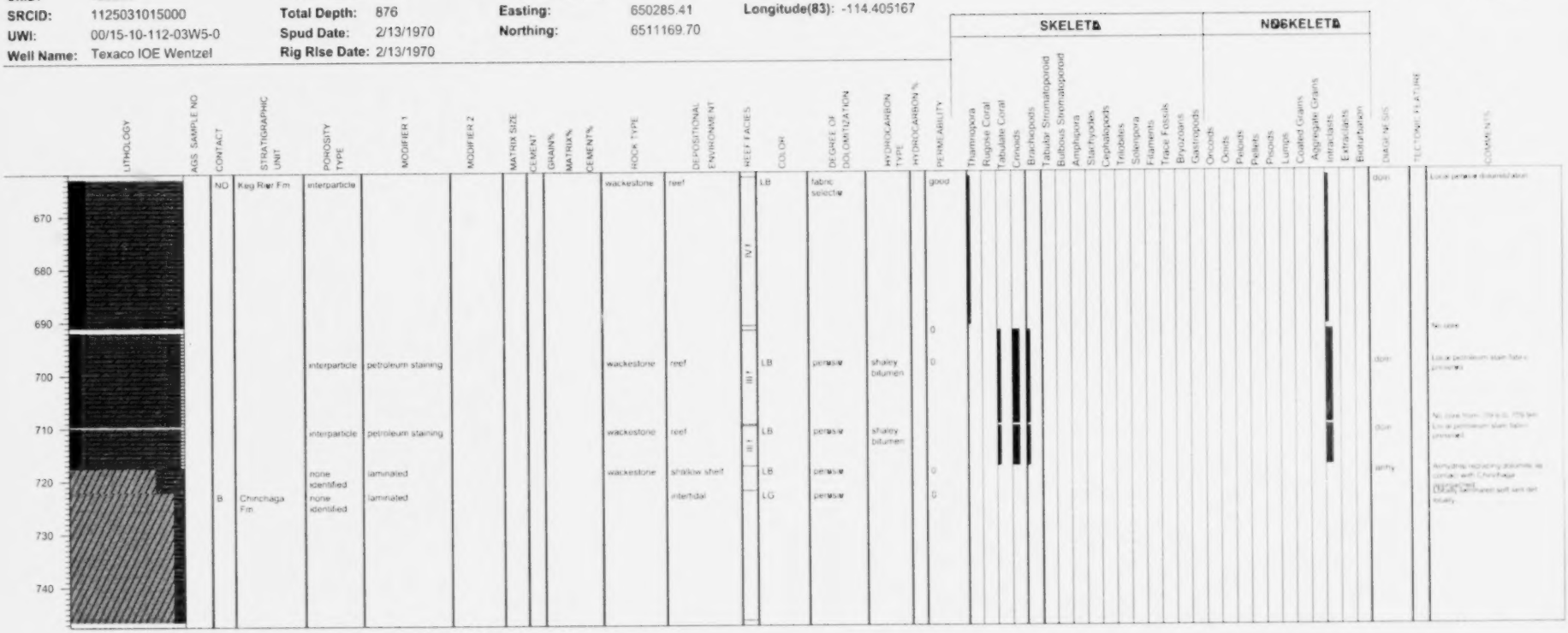


SitID:	145126	**KB Elevation:**	759.2	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.47939
SRCID:	985120115000	**Total Depth:**	1707	**Easting:**	571943.63	**Longitude(83):**	-115.80024
UWI:	00/15-01-098-12W5/0	**Spud Date:**		**Northing:**	6371175.01		
Well Name:	CDN Roxy et al Talbot Lake	**Rig Rlse Date:**	1/23/1987				

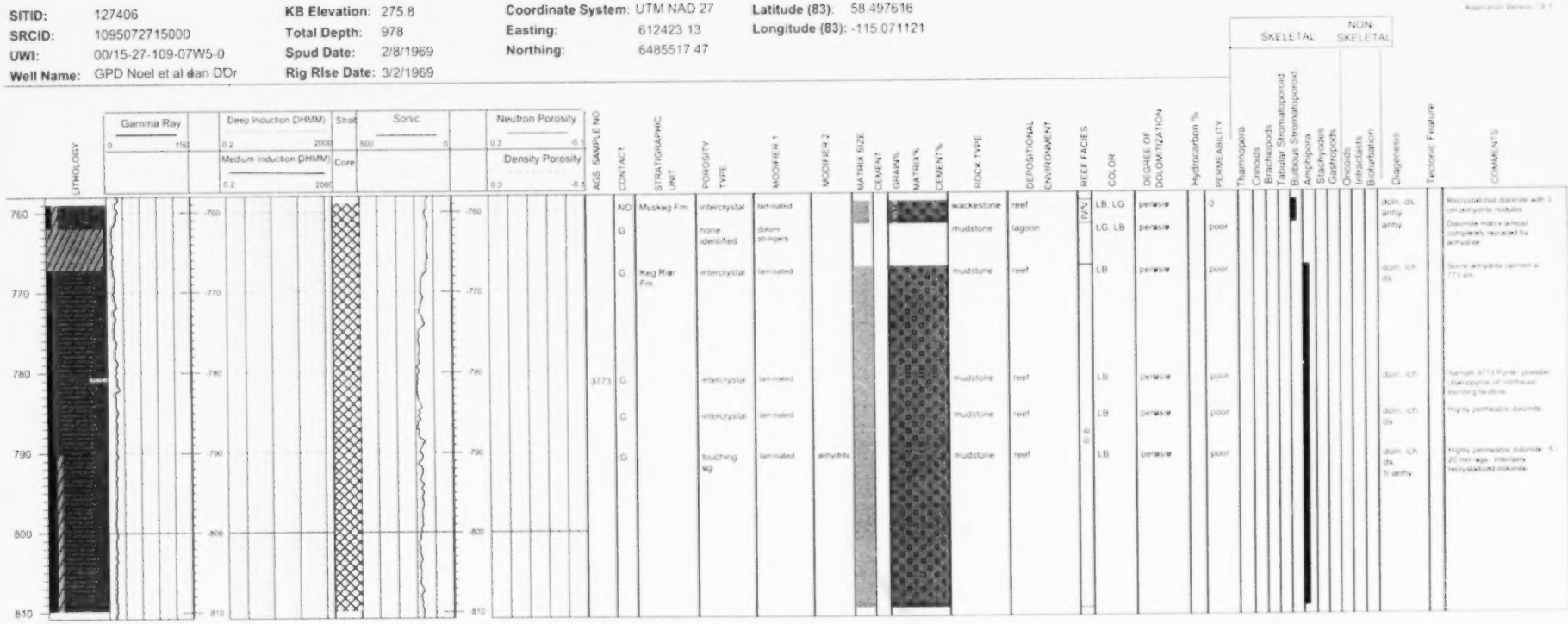


SitID:	128064	**KB Elevation:**	330.7	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.716366
SRCID:	1125031015000	**Total Depth:**	876	**Easting:**	650285.41	**Longitude(83):**	-114.405167
UWI:	00/15-10-112-03W5-0	**Spud Date:**	2/13/1970	**Northing:**	6511169.70		
Well Name:	Texaco IOE Wentzel	**Rig Rlse Date:**	2/13/1970				

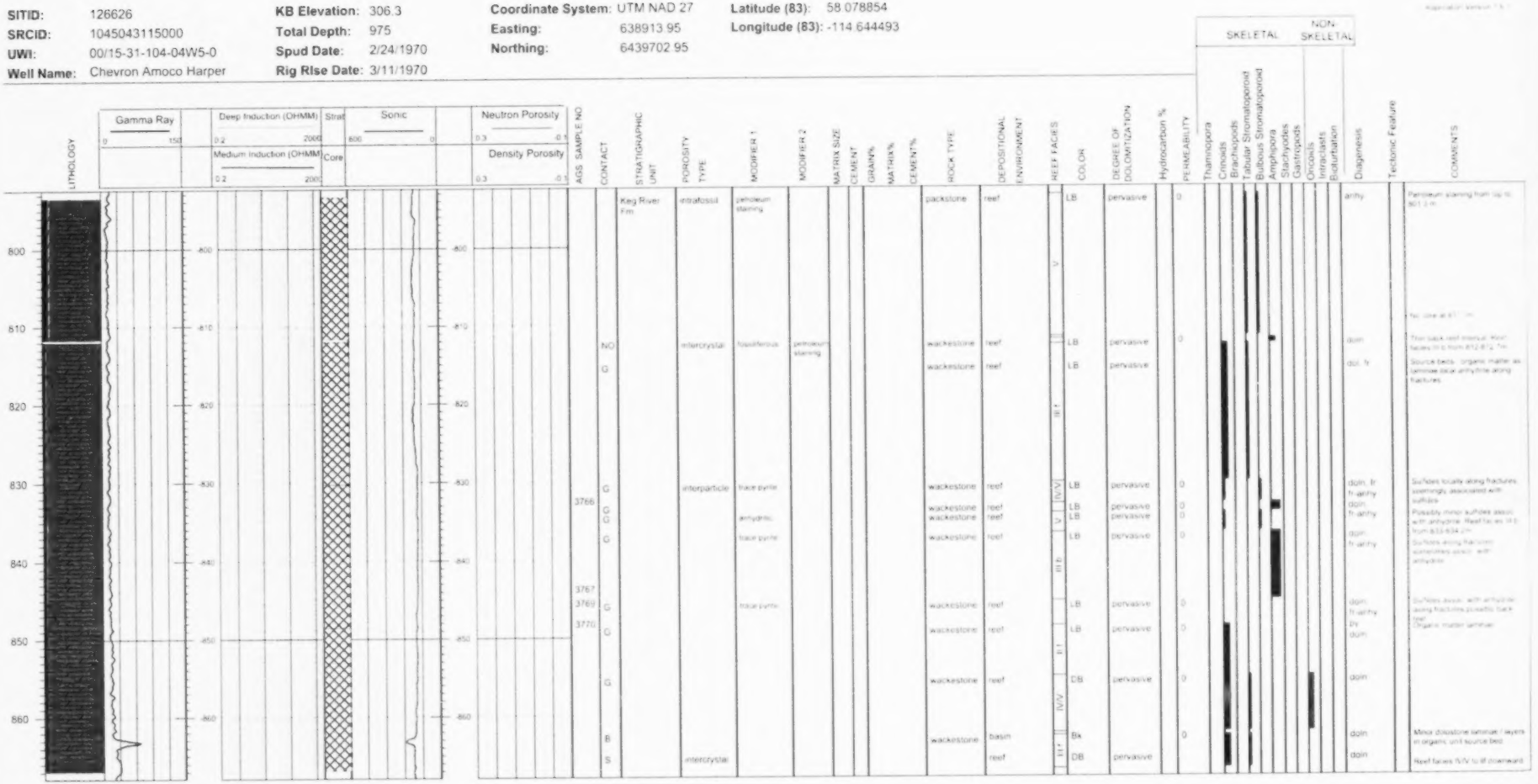
Application Version 1.6.1



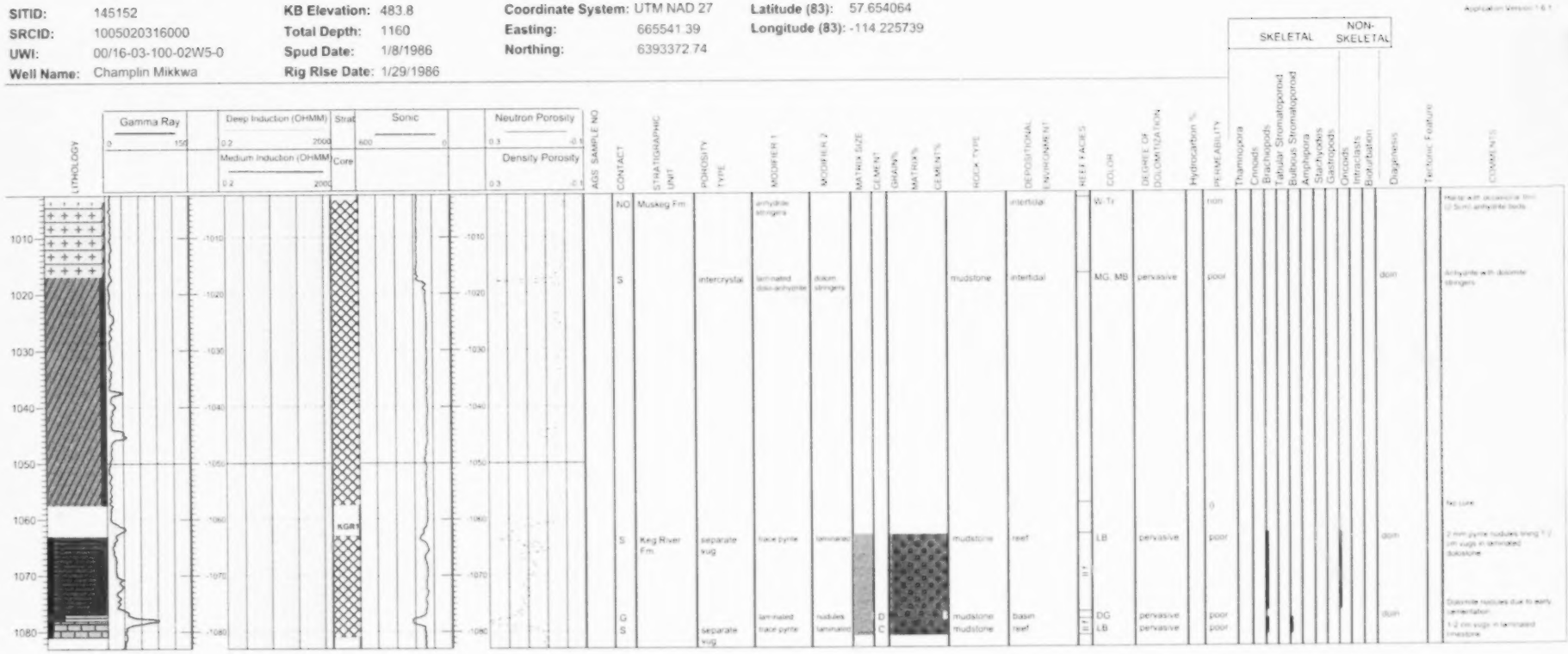
SITID:	127406	**KB Elevation:**	275.8	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.497616
SRCID:	1095072715000	**Total Depth:**	978	**Easting:**	612423.13	**Longitude (83):**	-115.071121
UWI:	00/15-27-109-07W5-0	**Spud Date:**	2/8/1969	**Northing:**	6485517.47		
Well Name:	GPD Noel et al dan DDr	**Rig Rlse Date:**	3/2/1969				



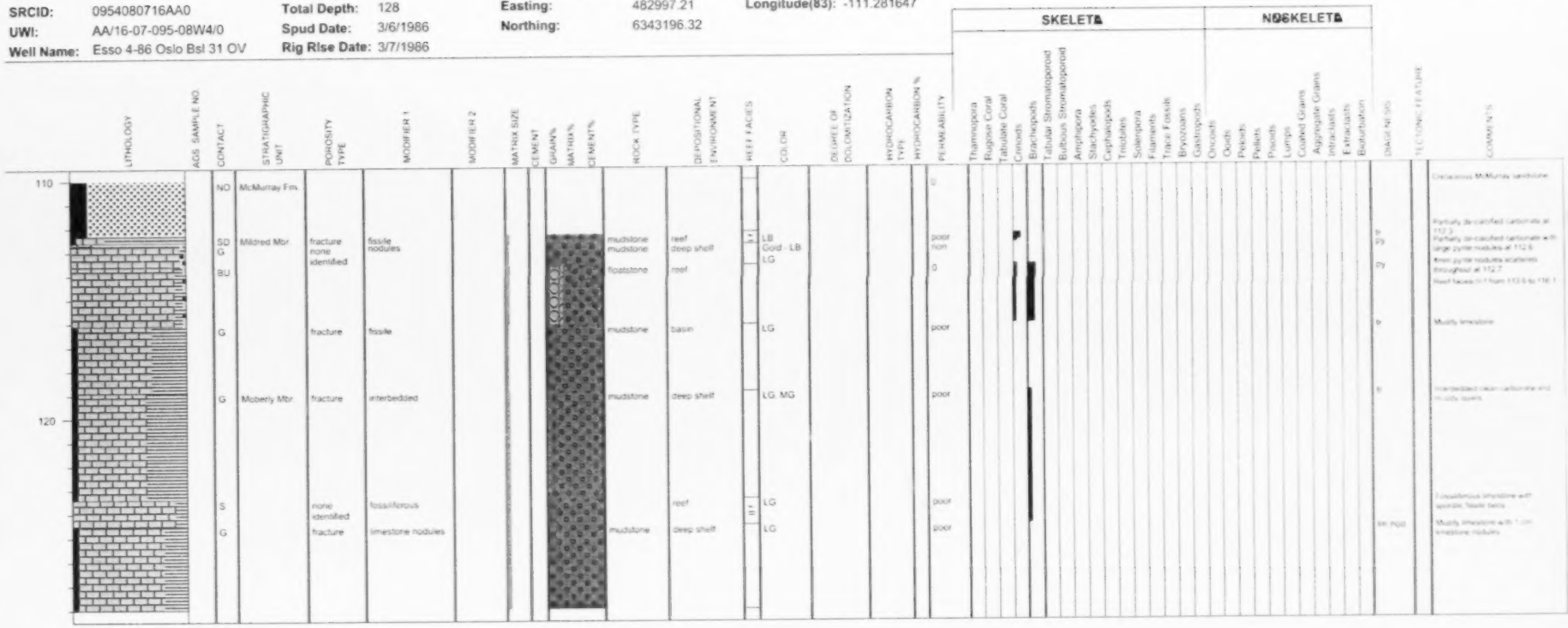
SITID:	126626	**KB Elevation:**	306.3	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.078854
SRCID:	1045043115000	**Total Depth:**	975	**Easting:**	638913.95	**Longitude (83):**	-114.644493
UWI:	00/15-31-104-04W5-0	**Spud Date:**	2/24/1970	**Northing:**	6439702.95		
Well Name:	Chevron Amoco Harper	**Rig Rlse Date:**	3/11/1970				



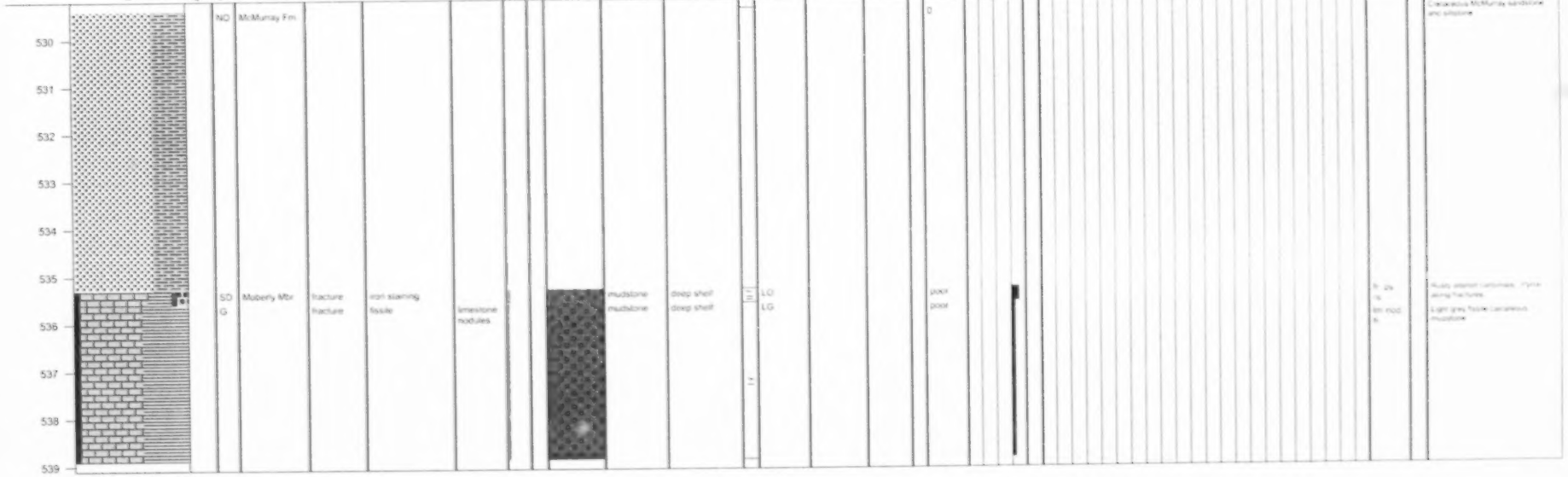
SITID:	145152	**KB Elevation:**	483.8	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.654064
SRCID:	1005020316000	**Total Depth:**	1160	**Easting:**	665541.39	**Longitude (83):**	-114.225739
UWI:	00/16-03-100-02W5-0	**Spud Date:**	1/8/1986	**Northing:**	6393372.74		
Well Name:	Champlin Mikkwa	**Rig Rlse Date:**	1/29/1986				



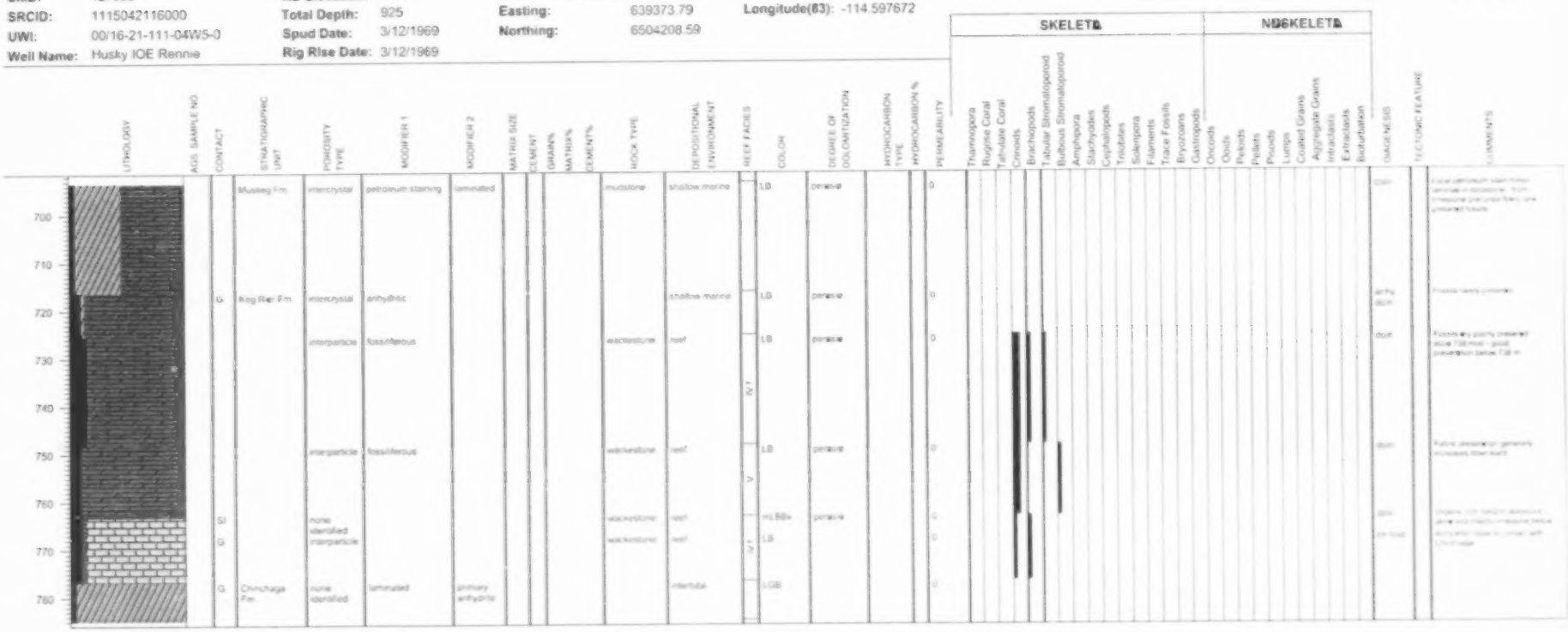
SitID:	144880	**KB Elevation:**	330.2	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.233452
SRCID:	0954080716AA0	**Total Depth:**	128	**Easting:**	482997.21	**Longitude(83):**	-111.281647
UWI:	AA/16-07-095-08W4/0	**Spud Date:**	3/6/1986	**Northing:**	6343196.32		
Well Name:	Esso 4-86 Oslo Bsl 31 OV	**Rig Rlse Date:**	3/7/1986				



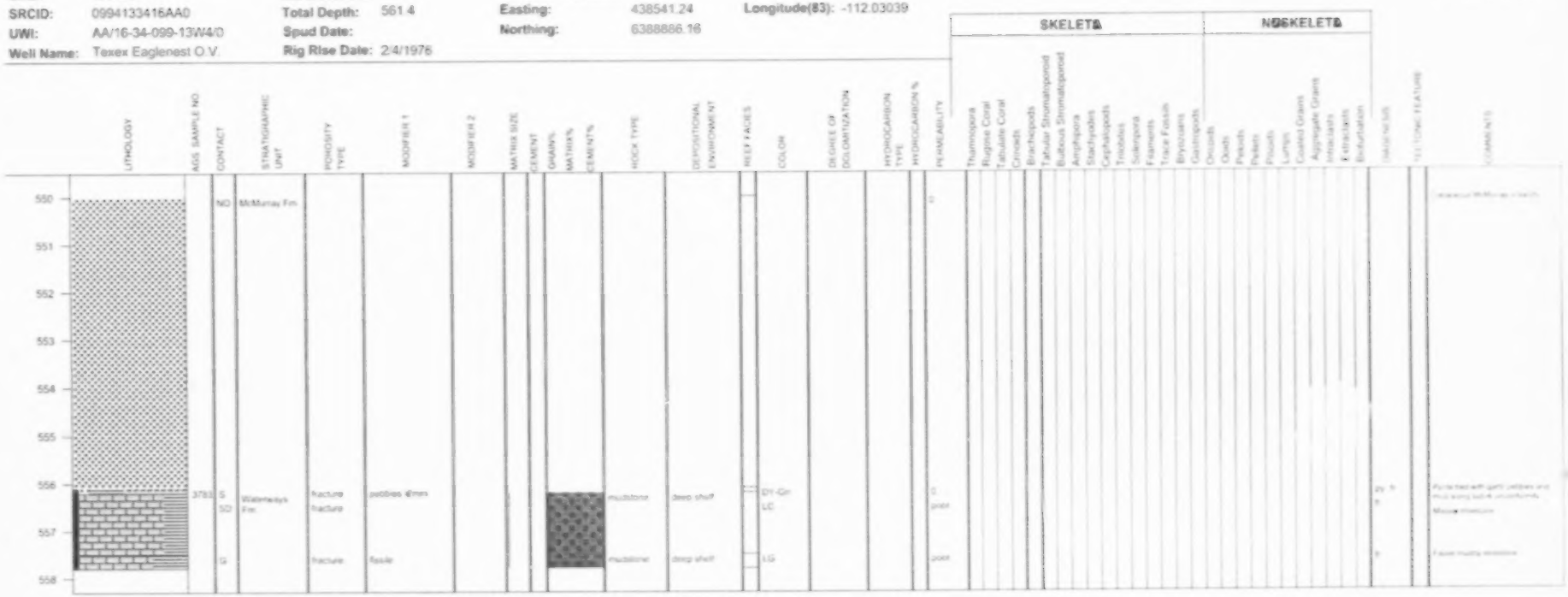
SitID:	126237	**KB Elevation:**	759.3	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.771542
SRCID:	1014131716AA0	**Total Depth:**	543.2	**Easting:**	435337.1	**Longitude(83):**	-112.087029
UWI:	AA/16-17-101-13W4/0	**Spud Date:**	2/8/1976	**Northing:**	6403583.53		
Well Name:	Texex Eaglenest 4-75OV 16-17-101-13	**Rig Rlse Date:**	2/9/1976				



SitID:	127908	**KB Elevation:**	338.9	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	58.657558
SRCID:	1115042116000	**Total Depth:**	925	**Easting:**	639373.79	**Longitude(83):**	-114.597672
UWI:	00/16-21-111-04W5-0	**Spud Date:**	3/12/1969	**Northing:**	6504208.59		
Well Name:	Husky IOE Rennie	**Rig Rlse Date:**	3/12/1969				



SitID:	126066	**KB Elevation:**	805.3	**Coordinate System:**	UTM NAD 27	**Latitude (83):**	57.64011
SRCID:	0994133416AA0	**Total Depth:**	561.4	**Easting:**	438541.24	**Longitude(83):**	-112.03039
UWI:	AA/16-34-099-13W4/0	**Spud Date:**		**Northing:**	6388886.16		
Well Name:	Texex Eaglenest O.V.	**Rig Rlse Date:**	2/4/1976				



Appendix B – Geochemical Analyses of Core Samples

Table B1 presents the core samples collected for trace element analysis during the 2002 core program along with their associated well name, location, formation, lithology and depth at which they were collected. Table B2 contains the trace element data for each sample.

Table B1. Core samples acquired during the 2002 core program.

AGS ID	GSC C-number	UWI	Well Name	UTM (NAD27)		Zone	NAD83		Depth (m)	Formation	Lithology
				Easting	Northing		Longitude	Latitude			
3765	C-421181	04-26-104-01W5	Mutex IOE Edra	673880.20	6438046.22	11	-114.0547682	58.0517665	739.30	Keg River	dolostone
3766	C-421182	15-31-104-04W5	Chevron Amoco Harper	638913.95	6439702.95	11	-114.6456906	58.0789577	831.90	Keg River	dolostone
3767	C-421183	15-31-104-04W5	Chevron Amoco Harper	638913.95	6439702.95	11	-114.6456906	58.0789577	843.10	Keg River	dolostone
3768	C-421184	04-26-104-01W5	Mutex IOE Edra	673880.20	6438046.22	11	-114.0547682	58.0517665	751.40	Keg River	mudstone
3769	C-421185	15-31-104-04W5	Chevron Amoco Harper	638913.95	6439702.95	11	-114.6456906	58.0789577	844.90	Keg River	dolostone
3770	C-421186	15-31-104-04W5	Chevron Amoco Harper	638913.95	6439702.95	11	-114.6456906	58.0789577	847.60	Keg River	dolostone
3772	C-421188	06-02-097-19W4	Dome Home Liege	381127.39	6361774.43	12	-112.9784143	57.3852413	802.60	Slave Point	limestone
3773	C-421189	15-27-109-07W5	GPD Noel et al Jean D'Or	612423.13	6485517.47	11	-115.0723583	58.4977245	780.60	Keg River	dolostone
3774	C-421190	04-03-100-07W5	Calstan Senex Creek 4-3-100-7	615595.28	6390605.17	11	-115.0646459	57.6449006	257.42	Jean Marie	dolostone
3775	C-421191	04-03-100-07W5	Calstan Senex Creek 4-3-100-7	615595.28	6390605.17	11	-115.0646459	57.6449006	257.44	Jean Marie	dolostone
3776	C-421192	04-03-100-07W5	Calstan Senex Creek 4-3-100-7	615595.28	6390605.17	11	-115.0646459	57.6449006	257.52	Jean Marie	dolostone
3777	C-421193	04-03-100-07W5	Calstan Senex Creek 4-3-100-7	615595.28	6390605.17	11	-115.0646459	57.6449006	257.71	Jean Marie	dolostone
3783	C-433003	16-34-099-13W4	Texex Eaglenest O.V.	438483.72	6388899.59	12	-112.0313567	57.6402227	556.10	Waterways	mudstone
3784	C-433004	10-12-093-07W4	Steepbank 2-75 OV 10-12	501150.56	6323240.14	12	-110.9819319	57.0546036	259.65	Waterways	limestone
3785	C-433005	04-07-096-09W4	Alsands 18 Hangst OV	472032.23	6351762.42	12	-111.4651536	57.3099701	112.50	Waterways	mudstone
3786	C-433006	04-07-096-09W4	Alsands 18 Hangst OV	472032.23	6351762.42	12	-111.4651536	57.3099701	114.10	Waterways	mudstone
3787	C-433007	10-24-093-07W4	Steepbank 2-75 OV 10-24	501164.98	6326552.20	12	-110.9816780	57.0843571	257.46	Waterways	siltstone
3788	C-433008	07-10-095-09W4	Esso 90-12 Oslo OV	477712.27	6342316.28	12	-111.3700218	57.2254294	111.00	Waterways	lm nod in mdst
3789	C-433009	07-10-095-09W4	Esso 90-12 Oslo OV	477712.27	6342316.28	12	-111.3700218	57.2254294	117.20	Waterways	lm nod in mdst
3790	C-433010	04-14-093-7W4	Steepbank 1-75 OV 4-14	498719.21	6324064.83	12	-111.0220193	57.0620110	226.70	Waterways	limestone
3791	C-433011	04-14-093-7W4	Steepbank 1-75 OV 4-14	498719.21	6324064.83	12	-111.0220193	57.0620110	227.60	Waterways	limestone
3792	C-433012	01-22-093-11W4	Syn Atha #27-42-0-0 OV 1-22	459125.78	6325980.25	12	-111.6751855	57.0774164	120.26	Waterways	limestone
3793	C-433013	07-29-093-13W4	Aostra utf Dover A077 OV 6-29	436110.67	6328197.86	12	-112.0553585	57.0947102	102.69	Waterways	limestone
3794	C-433014	08-29-094-08W4	Esso 1-86 Oslo BSL 31 OV 8-29	485325.71	6337442.93	12	-111.2436430	57.1819563	99.15	Waterways	limestone
3795	C-433015	08-29-094-08W4	Esso 1-86 Oslo BSL 31 OV 8-29	485325.71	6337442.93	12	-111.2436430	57.1819563	105.40	Waterways	limestone
3799	C-433021	07-10-095-09W4	Esso 90-12 Oslo OV	477712.27	6342316.28	12	-111.3700218	57.2254294	110.65	Waterways	lm nod in mdst
RE 3788											
Carb std.											

Note: RE = reruns

Table B2. Trace element data for core samples from the 2002 core program

Analyzed by: ICP-ES Aqua Regia																					
AGS ID	GSC C-number	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppb	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %
3765	C-421181	3	15.2	78.5	31	0.3	6.5	1.8	115	5.89	4.1	0.7	< .5	0.1	98	0.2	1.8	< .1	9	14.29	0.009
3766	C-421182	0.3	2.9	8.1	4	< .1	2.2	0.4	60	0.24	1.6	1.6	< .5	< .1	120	< .1	0.2	< .1	2	20.39	0.001
3767	C-421183	1.1	85.5	116.3	30	0.1	26.9	1.7	45	11.87	21.7	1.4	1.8	< .1	87	0.2	1.2	< .1	< 1	9.26	0.001
3768	C-421184	82.5	51.6	10.8	8	0.1	54.3	5.3	38	0.79	3.8	4.9	< .5	0.7	462	< .1	0.7	0.1	53	21.64	0.04
3769	C-421185	0.7	14.1	15.4	7	< .1	8.1	0.7	69	1.94	5.3	2.3	0.5	< .1	132	0.1	0.6	< .1	4	21.46	0.003
3770	C-421186	2.5	10.4	7.5	4	< .1	6.6	1.2	51	1.96	2.1	1.2	2.2	< .1	136	< .1	0.3	< .1	2	20.65	0.003
3772	C-421188	16.9	9.1	36.9	7	< .1	9.8	1.6	299	13.1	13.2	1.4	< .5	0.4	133	0.1	0.6	< .1	2	15.82	0.083
3773	C-421189	1.7	1.4	246.1	11	< .1	4.2	0.2	24	26.74	18.2	55.7	< .5	< .1	15	0.2	0.6	< .1	< 1	3.3	< .001
3774	C-421190	46.8	0.7	2	4	< .1	58.5	1.6	157	14.87	265	1.7	< .5	0.2	94	< .1	1.2	< .1	1	11.52	0.004
3775	C-421191	41.6	0.4	2.4	17	< .1	79.2	2.3	171	13.84	285.3	0.2	0.5	< .1	272	< .1	1.5	< .1	< 1	13.88	0.002
3776	C-421192	56.8	0.4	1.5	58	< .1	73.9	2.3	85	21.33	383.4	0.3	< .5	0.1	65	< .1	1.3	< .1	< 1	7.26	0.001
3777	C-421193	28.8	1.7	3.6	18	< .1	61.9	2.3	94	16.96	227.6	0.9	< .5	0.1	93	< .1	1	< .1	1	10.33	0.002
3783	C-433003	1.3	8.3	9.5	44	< .1	134.9	27.1	1292	20.08	13.1	0.2	< .5	1.6	6	0.1	0.2	< .1	1	0.11	0.008
3784	C-433004	1	4.3	3.5	10	< .1	23.2	10.5	446	14.17	2	0.3	< .5	0.7	121	< .1	< .1	< .1	1	11.04	0.033
3785	C-433005	0.5	10.3	9.8	19	< .1	50.6	16.4	127	9.58	11.3	1.6	< .5	4.3	96	< .1	0.2	0.2	20	1.86	0.701
3786	C-433006	0.2	3.7	2	28	0.1	14.2	5.3	895	1.88	0.7	0.3	< .5	2	255	< .1	< .1	0.1	7	20.71	0.036
3787	C-433007	2.8	7.3	12.3	56	< .1	137.1	23	110	25.53	4.3	0.2	0.7	1.1	7	0.9	0.1	0.1	< 1	0.04	0.001
3788	C-433008	0.2	8	3.7	12	< .1	10.9	4.3	1735	5.47	1.3	0.4	< .5	2.3	152	< .1	0.1	0.1	9	15.12	0.097
3789	C-433009	0.8	6.6	5.5	45	< .1	44.5	19	1052	4.43	4.6	1	< .5	2	222	< .1	0.1	0.7	8	21.03	0.032
3790	C-433010	0.8	5.9	27.1	36	< .1	115.6	48.4	885	10.46	21.7	0.5	< .5	1.6	142	0.3	0.5	< .1	6	12.84	0.021
3791	C-433011	0.5	3.6	6.6	6	< .1	37.1	10.7	745	4.92	1.6	0.2	< .5	0.5	251	< .1	0.1	< .1	2	23.56	0.022
3792	C-433012	1	4.2	8.1	26	0.5	80.4	12.3	91	32.04	3.6	0.1	< .5	0.8	20	0.5	0.1	0.1	2	0.83	0.005
3793	C-433013	0.3	1	1.1	1	< .1	< .1	0.2	297	5.04	2.5	0.3	< .5	0.1	224	< .1	< .1	< .1	< 1	28.12	0.015
3794	C-433014	0.8	4.2	3.4	40	< .1	46.7	13	135	29.9	6.7	0.2	< .5	0.5	58	< .1	< .1	0.1	1	2.92	0.022
3795	C-433015	0.3	3.5	2.3	37	< .1	13.2	2.7	523	3.79	0.7	0.2	< .5	0.9	245	< .1	0.1	< .1	5	24.39	0.027
3799	C-433021	0.3	7.5	4	75	< .1	10.9	4.8	2186	11.45	1.1	0.3	< .5	1.7	121	< .1	0.1	0.1	7	12.92	0.081
RE 3788		0.2	7.6	3.6	11	< .1	10.5	4.6	1752	5.48	0.7	0.4	< .5	2.2	154	< .1	< .1	0.1	8	14.76	0.101
Carb std.		0.8	12.9	9.6	39	< .1	8.3	3.9	492	1.05	1.7	0.4	< .5	2.3	128	0.1	0.1	0.1	17	14.96	0.046
Note: RE = reruns																					

Table B2. Trace element data for core samples from the 2002 core program, continued

Analyzed by: ICP-ES Aqua Regia																
AGS ID	GSC C-number	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Hg ppm	Sc ppm	Tl ppm	S %	Ga ppm
3765	C-421181	1	13.8	8.03	46	0.002	5	0.24	0.171	0.09	1.3	0.05	1	0.1	6.12	1
3766	C-421182	< 1	< 1.0	12.38	22	< .001	4	0.02	0.052	0.01	0.1	0.07	0.1	< .1	1.13	< 1
3767	C-421183	< 1	2.9	6.88	12	< .001	2	0.01	0.043	0.01	1.2	0.06	0.1	0.2	11.59	< 1
3768	C-421184	2	5.2	1.74	14	0.002	43	0.15	0.033	0.11	0.2	0.12	1.1	0.2	1.05	1
3769	C-421185	< 1	1.8	11.38	9	0.001	5	0.06	0.113	0.03	0.1	0.05	0.3	< .1	3.31	< 1
3770	C-421186	< 1	3.2	9.79	7	0.001	408	0.07	0.096	0.05	0.5	0.01	1.1	< .1	3.33	< 1
3772	C-421188	4	4.3	0.51	7	0.001	6	0.14	0.041	0.06	0.2	0.02	1.8	0.2	9.2	1
3773	C-421189	< 1	3.6	4.05	2	< .001	12	0.01	0.08	< .01	1.8	0.13	< .1	0.1	23.56	< 1
3774	C-421190	1	1.7	2.47	9	< .001	2	0.03	0.014	0.02	0.1	0.11	0.7	2.8	10.34	< 1
3775	C-421191	< 1	3.4	0.54	9	< .001	< 1	0.01	0.014	0.01	1.6	0.04	0.2	3.1	7.58	< 1
3776	C-421192	< 1	1.9	1.46	8	< .001	2	0.02	0.01	0.01	0.2	0.03	0.4	3	15.6	< 1
3777	C-421193	1	5.6	3.63	7	< .001	3	0.03	0.027	0.02	1.7	0.08	0.4	3.4	13.48	< 1
3783	C-433003	3	6.5	0.02	9	0.003	< 1	0.14	0.015	0.02	1.1	0.14	0.4	2	19.43	1
3784	C-433004	3	7.3	0.19	23	0.001	7	0.16	0.025	0.07	1	0.04	0.9	0.1	11.26	1
3785	C-433005	18	24.3	0.13	24	0.004	32	0.82	0.061	0.37	0.2	0.08	7.2	0.1	9.98	4
3786	C-433006	5	10.1	0.93	77	0.001	9	0.23	0.029	0.13	< .1	< .01	1.9	< .1	1.36	1
3787	C-433007	3	15.2	0.02	7	0.001	4	0.13	0.023	0.05	6.6	0.09	0.4	0.3	27	1
3788	C-433008	6	12.5	2.28	23	0.001	9	0.3	0.026	0.17	< .1	0.01	2	< .1	2.84	2
3789	C-433009	8	13.4	0.94	17	0.001	10	0.39	0.038	0.17	0.6	0.02	2	0.1	2.7	2
3790	C-433010	8	6.1	0.2	21	< .001	8	0.18	0.039	0.08	0.1	0.19	2.1	0.2	7.13	1
3791	C-433011	5	4.9	0.23	18	0.001	5	0.09	0.024	0.05	0.5	0.03	0.8	0.1	3.67	< 1
3792	C-433012	1	6.3	0.12	8	0.002	2	0.19	0.03	0.06	0.5	0.05	0.6	0.7	34.13	1
3793	C-433013	1	1.1	0.24	58	< .001	< 1	0.03	0.014	0.01	< .1	0.02	0.2	0.1	4.25	< 1
3794	C-433014	1	5.2	0.12	8	0.001	2	0.11	0.012	0.06	0.4	0.07	1	0.1	29.13	1
3795	C-433015	4	7.6	2.09	23	0.001	16	0.22	0.043	0.12	0.3	0.02	1.1	< .1	3.18	1
3799	C-433021	4	10.3	1.82	33	0.001	8	0.24	0.023	0.14	< .1	0.01	1.4	< .1	7.7	1
RE 3788		6	12	2.22	23	0.001	11	0.29	0.026	0.16	< .1	0.01	1.9	< .1	2.82	1
Carb std.		10	12.1	4.51	39	0.025	4	0.56	0.02	0.16	0.2	0.01	2.4	< .1	< .05	2

Appendix C – Compilation of Geochemical Data for Carbonates in Northern Alberta

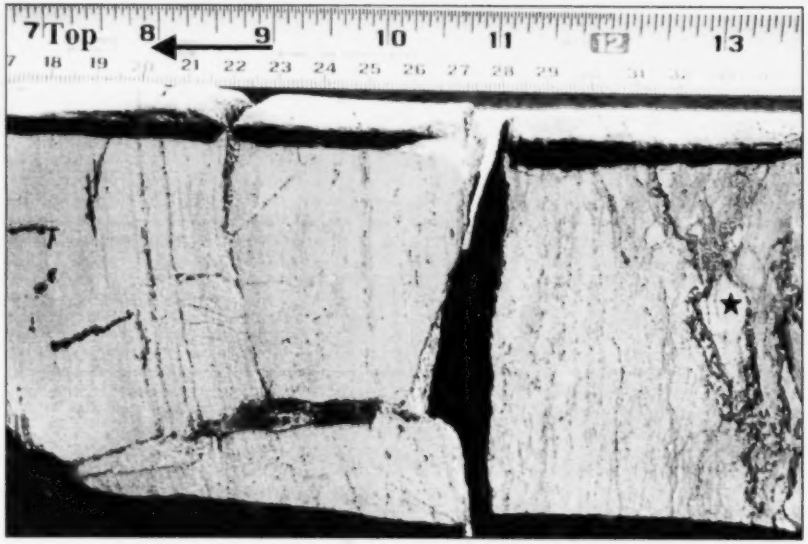
Table C1 presents a compilation of trace element data for carbonates and associated non-clastic lithologies in northern Alberta. As indicated in the table, some of the data are taken from metallic exploration diamond-drill holes and other from petroleum exploration wells. Sources for the data include provincial and federal government reports, company reports, assessment reports to government and press releases. The purpose of including the table in this report is so the reader can compare the trace element data for the core samples collected during the 2002 core program (Table B2, Appendix B) to the compiled data for northern Alberta, thereby providing a sense of whether the core sample data are representative or anomalous.

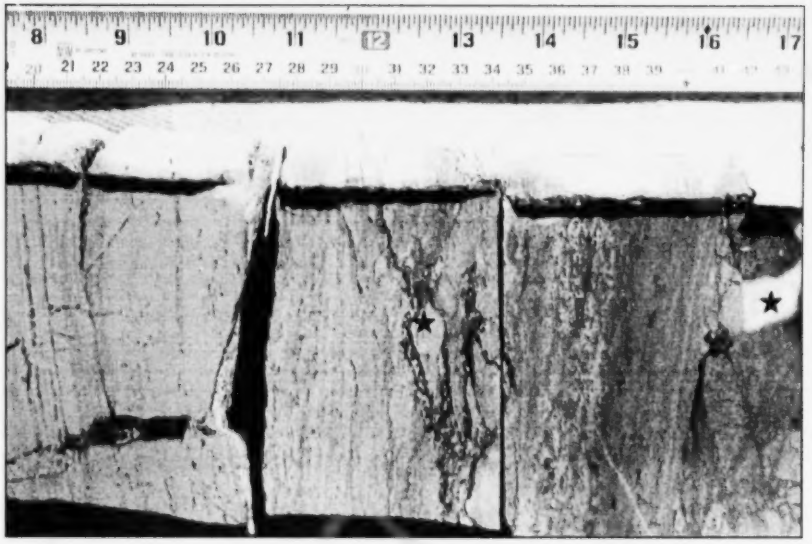
Table 21 Compilation of selected trace element analyses for carbonates and associated non-clastic lithologies in northern Alberta

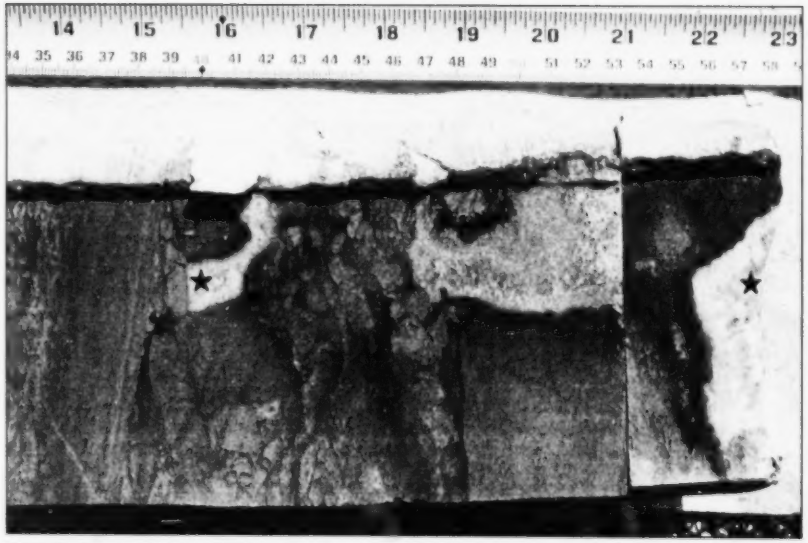
Sample ID	Sample Number	NTS Easting	NTS Northing	Unit	Source/Well/Company	Well Number	Depth (m) From	Depth (m) To	Formation	Lithology	Metallic Mineralization	Analysis Performed	Ag ppm	Al %	As ppm	Au ppm	B ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Fe wt%	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Nb ppm	Ni %	P %	Pb ppm	Rb ppm	Sb ppm	Sc ppm	Se ppm	Sn ppm	Sr ppm	Th ppm	Ti %	U ppm	V ppm	W ppm	Y ppm	Zn ppm
					Kennedy Outcrop				Muskeg	Argillaceous limestone	Pyrite, galena, sphalerite																																							
					Kennedy Outcrop				Muskeg	Limestone																																								
					Amoco Bear Canada Ltd.				Muskeg	Limestone																																							
					Kennedy Outcrop				Grosmont

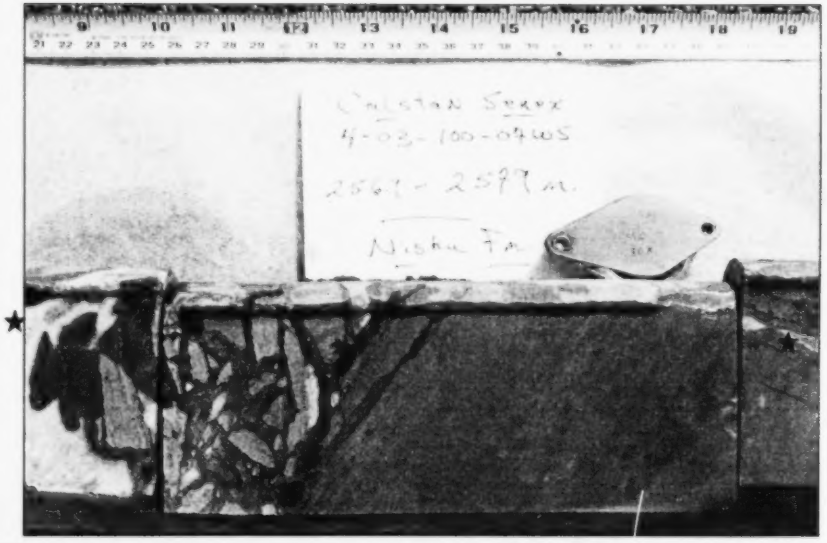
Appendix D - Selected Photographs of Core From Well Calstan Senex Creek 04-03-100-07W5

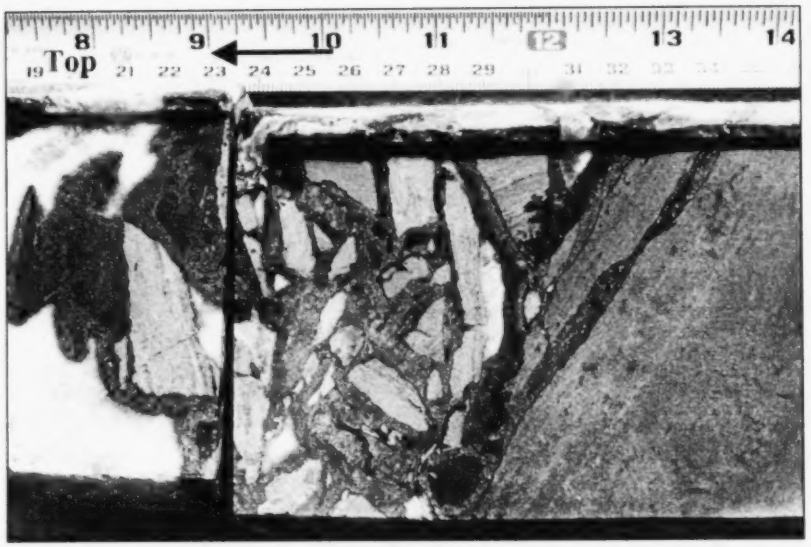
Selected photographs of core from well Calstan Senex Creek 04-03-100-07W5 (615595.28 E, 6390605.17 N, NAD27) are contained in this appendix. This well contained the only example of breccia and later infilling with sulphides (Py) and coarse calcite seen during the 2002 core program. Overlap points between core photos are indicated by black stars. The core is from the dolomitized Upper Devonian Jean Marie Member (Nisku Formation equivalent) of the Redknife Formation at approximately 257 m depth. Jean Marie dolostone was faulted immediately above and below and within the brecciated interval. Coarse calcite is contemporaneous with the sulphides in the breccia.

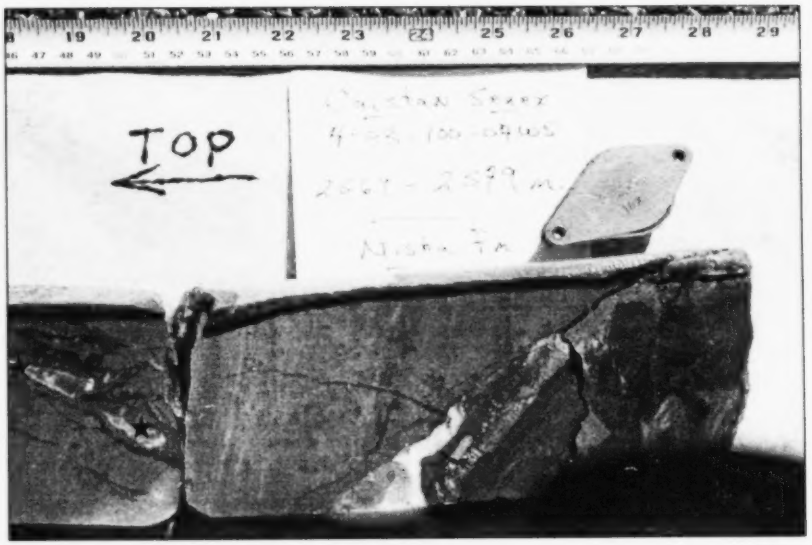

7 Top 8 9 10 11 12 13

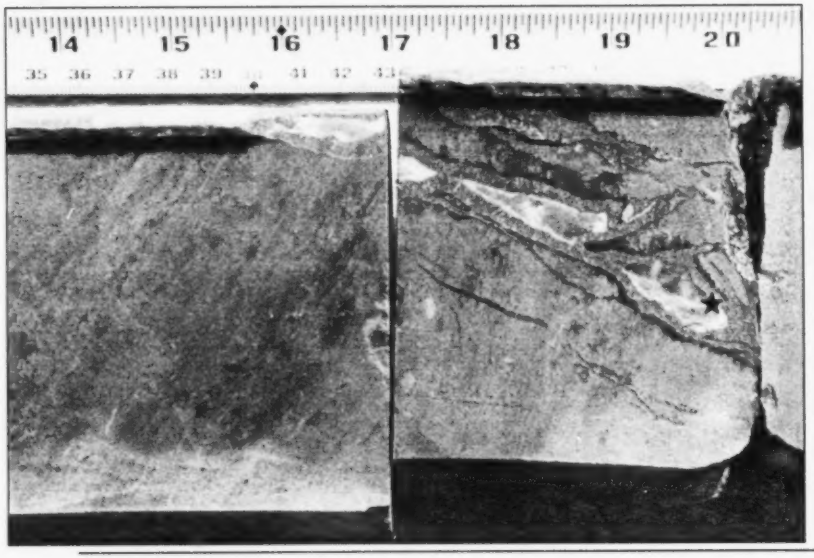

8 9 10 11 12 13 14 15 16 17


14 15 16 17 18 19 20 21 22 23

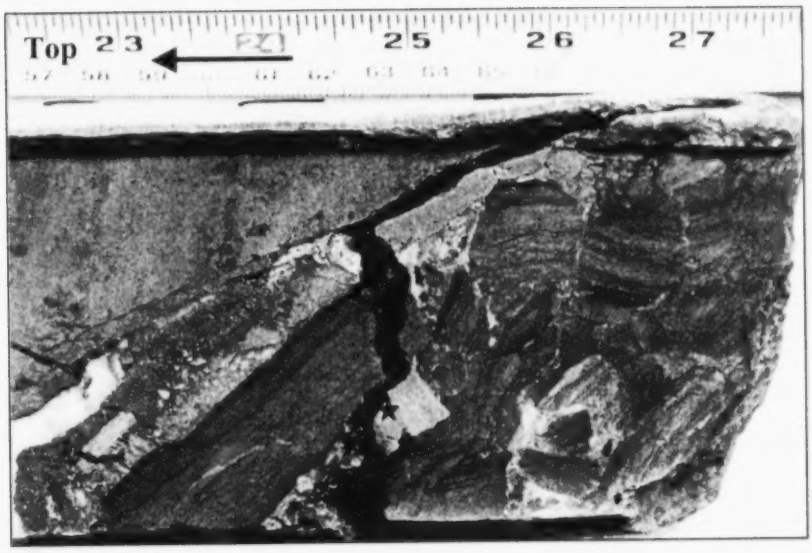

Calstan Sears
4-03-100-07W5
2561 - 2597 m.
Nisku Fm.


Top


TOP






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